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14. ABSTRACT
This randomized controlled trial compared the use of the Collaborative Assessment and Management of Suicidality (CAMS) to enhanced care as usual (E-CAU). *Method:* Study participants were 148 Active-Duty Soldiers who presented to a military outpatient behavioral health clinic. There were 73 Soldiers received CAMS; 75 Soldiers received E-CAU in the same clinic. Nine *a-priori* treatment outcomes were measured at baseline and at 1, 3, 6, and 12 months (with a 78% retention of intent-to-treat participants at 12 months). *Results:* Soldiers in both arms of the trial responded to study treatments in terms of all outcomes (effect sizes ranged from 0.63 to 12.04). CAMS participants were significantly less likely to have any suicidal thoughts by 3 months in comparison to those in E-CAU (p=.028). *Conclusions:* Soldiers who received CAMS and E-CAU significantly improved post-treatment. Those who received CAMS were less likely to report SI at 3 months.

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INTRODUCTION: Narrative that briefly (one paragraph) describes the subject, purpose and scope of the research.

This study was designed to investigate the effectiveness of a novel clinical intervention developed by the PI called the “Collaborative Assessment and Management of Suicidality” (CAMS). CAMS is not a new psychotherapy; it is a therapeutic clinical framework with a distinct clinical philosophy and a set of structured procedures that is designed to enhance the therapeutic alliance and increase treatment motivation in the patient (Jobes, 2016; Jobes et al., 2016). This randomized controlled trial (RCT) compared the effectiveness of CAMS versus Enhanced Care As Usual (E-CAU) in a sample of n = 148 active-duty US Army Soldiers who were experiencing suicidal ideation and/or behaviors. Research clinicians for both treatment conditions were recruited from the Army Research Site (ARS), Fort Stewart, GA, and were trained and monitored for fidelity to their respective treatment condition by the study staff (including adherence in the CAMS arm to the model). Participants were recruited from a number of sources at the ARS to include the behavioral health clinic and the inpatient unit. The goal of this study was to determine if CAMS is more effective than E-CAU in reducing suicidal ideation and behaviors (and various secondary variables such as overall symptom distress, Emergency Department utilization, etc.) in comparison to Soldiers who received E-CAU at this ARS.

BODY: This section of the report shall describe the research accomplishments associated with each task outlined in the approved Statement of Work. Data presentation shall be comprehensive in providing a complete record of the research findings for the period of the report. Provide data explaining the relationship of the most recent findings with that of previously reported findings. Appended publications and/or presentations may be substituted for detailed descriptions of methodology but must be referenced in the body of the report. If applicable, for each task outlined in the Statement of Work, reference appended publications and/or presentations for details of result findings and tables and/or figures. The report shall include negative as well as positive findings. Include problems in accomplishing any of the tasks. Statistical tests of significance shall be applied to all data whenever possible. Figures and graphs referenced in the text may be embedded in the text or appended. Figures and graphs can also be referenced in the text and appended to a publication. Recommended changes or future work to better address the research topic may also be included, although changes to the original Statement of Work must be approved by the Army Contracting Officer Representative. This approval must be obtained prior to initiating any change to the original Statement of Work.

In the course of Year 1, the research team was primarily engaged in gaining IRB approvals from each of the IRB committees involved in this study: the Dwight D. Eisenhower Army Medical Center (DDEAMC), the Department of Veterans Affairs Veterans Integrated Service Network 19 Mental Illness Research, Education, and Clinical Center (VA VISN 19 MIRECC), the University of Washington (UW), and The Catholic University of America (CUA). The research team was successful in obtaining approval from all of the IRB committees, but this process took much longer than anticipated and pushed back the hiring and training of staff and therapists, as well as the recruitment of participants, approximately one year later than initially proposed in the Statement of Work (SOW). Since initial approval was gained from all involved IRB's during Year 1 of the study, we subsequently applied for and maintained continuous approval from all IRB's in Years 2, 3, 4, 5, and throughout the first and second no cost extension (NCE) years.

Given this delay in the initial execution of the RCT, at the conclusion of Year 4 of the study team applied for, and was approved by MOMRP/TATRC to extend the study for a 12-month NCE period. The 12-month NCE period was approved from 15 MAR 2015 through 14 MAR 2016. Due to the 12-month follow-up period for all participants following the conclusion of treatment, it was necessary to apply for a second NCE year to allow for all participants to be assessed for up to 1-year after treatment, and to allow the study team to analyze the data, and disseminate and publish the results. The second 12-month NCE period was approved from 15 MAR 2016 through 14 MAR 2017. The study team completed all study tasks and deliverables prior to the end date of the NCE on 14 MAR 2017. This included analyses of all study data, and the preparation and submission of primary outcome findings from the RCT to an appropriate scholarly journal for publication.

The initial primary outcomes manuscript was submitted to a peer-review psychiatry journal in February 2017 and received seven thorough reviews. The editor invited the authors to re-submit the manuscript under the status of “minor revision” which was done on 6 June 2017. This revision of the manuscript has been attached in its entirety as Appendix A and provides an in-depth review of all the primary experimental outcomes. In summary, Soldiers who received CAMS and E-CAU both significantly improved across post-treatment assessments at 3, 6, 12 months. The majority of the effect sizes across all assessment measures in both arms of the trial were “large” ($d \geq .8$ as per Cohen, 1988). Those suicidal Soldiers who received CAMS were less likely to report SI at 3 months which replicates previously obtained CAMS data in a non-randomized case control study using CAMS with n=55 suicidal U.S. Air

Force personnel (Jobes et al., 2005). Further group differences were not seen at the 6 and 12 month time points. Details of the primary outcomes including statistical analyses and interpretation of all the results are in the manuscript that appears in the Appendix.

There are additional moderator analyses that are currently underway for a next manuscript of potential moderators across all treatment outcomes. The proposed moderators include: gender, age, marital status, race, history of attempts, combat deployments, baseline distress, borderline personality disorder, patient expectancies, and clinician expectancies. The results of these analyses will be included in a prospective manuscript that will be written and submitted for publication later this summer.

The initially proposed timeline of activities is included below:

Timeline of Study Activities Over Four Years																
	Year 1				Year 2				Year 3				Year 4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Hiring and training of staff and therapists	X				X				X							
Training of therapists		X														
Recruitment of training cases		X	X													
Supervision of therapists adherence		X	X	X	X	X	X	X	X	X	X	X	X			
Recruitment of clinical trial cases			X	X	X	X	X	X	X	X	X	X				
Baseline assessments			X	X	X	X	X	X	X	X	X	X				
Clinical trial treatment conducted			X	X	X	X	X	X	X	X	X	X	X			
Follow-up assessments			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Data entry and cleaning			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Data analysis					X	X	X	X	X	X	X	X	X	X	X	X
Dissemination of results									X	X	X	X	X	X	X	X

The following table is the revised timeline of the project that accounts for the initial delay due to IRB approvals, and the subsequent 2 NCE years that were requested and approved. Throughout the study there were various delays that impacted out

timeline. These include: previously described delays in gaining IRB approvals, initial difficulties with in-processing the study staff onto the ARS, administrative and practical challenges at the ARS, and difficulties with retention among the clinical research therapists (due to the high turnover rate of staff at the ARS). The table below is thus an updated timeline of study activities that reflects the impact of these challenges to conducting the study as per the original proposed timeline:

Timeline of Study Activities Over Four Years (Plus 12-Month No Cost Extension [NCE])

	Year 1				Year 2				Year 3				Year 4				1st NCE Year				2nd NCE Year			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Hiring and training of staff and therapists	X				X				X				X											
Training of therapists					X	X																		
Recruitment of training cases					X	X	X																	
Supervision of therapists' adherence					X	X	X	X	X	X	X	X	X	X	X	X	X							
Recruitment of clinical trial cases					X	X	X	X	X	X	X	X	X	X	X	X								
Baseline assessments					X	X	X	X	X	X	X	X	X	X	X	X								
Clinical trial treatment conducted					X	X	X	X	X	X	X	X	X	X	X	X	X							
Follow-up assessments						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Data entry and cleaning					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Data analysis									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dissemination of results													X	X	X	X	X	X	X	X	X	X	X	X

Participant recruitment for the study was completed in December 2014. After participant recruitment was completed, and the data were cleansed and checked for any errors, study staff noted that the total number of participants recruited was n = 148 rather than the original planned sample size of n = 150. This was due to an error in the database transposing two participants from the pilot phase of the RCT in Year 1, into the actual intent-to-treat (ITT) sample. The study team conducted power analyses with the sample size of 148 participants and compared that to the original power analyses conducted for an expected sample size of 150 participants. The team found negligible

differences in power between the sample sizes and determined that a final sample size of n = 148 participants provided more than sufficient power for subsequent statistical analyses of the data. Please refer to the study's CONSORT chart which is embedded as Figure 1 in the submitted outcome manuscript under Appendix A for further, specific information on participant recruitment, randomization, treatment retention, and assessment follow-up.

All study treatments for both experimental and control condition participants concluded in DEC 2014. While research clinicians were still actively providing treatment to participants, Dr. Katherine Comtois, the Co-PI from the University of Washington, and the on-site Participant Coordinator, Ms. Gretchen Ruhe, provided regular consultation to and had regular interactions with the E-CAU therapists to ensure that the study team provided needed resources for them to successfully participate in the study. The CUA team viewed 10% of all E-CAU therapy sessions to ensure fidelity to treatment condition and made sure that research clinicians were in fact providing E-CAU to study participants as outlined in the project's statement of work (SOW). Throughout the study, the E-CAU clinicians did in fact provide E-CAU, and at no time did they provide the experimental treatment (CAMS).

The CUA team did not need to conduct further CAMS trainings for the CAMS research clinicians during the current project year as all treatment had already concluded. While treatment was being actively provided throughout the study, the CUA team and the on-site Participant Coordinator provided regular consultation to and had regular interaction with the CAMS therapists to ensure that the study team provided

needed resources for them to successfully participate in the study. Each week the CUA team viewed the CAMS therapy sessions to further ensure satisfactory adherence to the CAMS intervention that was provided to the study participants.

Throughout Year 4, the entire study team held bi-monthly conference calls to coordinate and evaluate study progress. Once participant recruitment was completed in DEC 2014, the study team determined that a monthly conference call was appropriate to maintain focus on follow-up assessments and data analyses. These team consultation calls focused on further refining the procedures for administering the baseline and follow-up assessments with research participants, refining and making the implementation of the treatment protocols and the CAMS training manual more user-friendly, as well as problem-solving general administrative and site-specific difficulties that have arisen at different points in the project year. A monthly recruitment call was also conducted by a sub-set of study personnel through first few quarters of Year 4 to more closely monitor recruitment of study participants (and clinicians) and problem-solve ways to enhance existing recruitment procedures. This call was discontinued in the final quarter as the research team successfully recruited its total intent-to-treat sample size of 148 participants in December 2014.

During the project year, as the team neared recruitment of the final participants, the need for the clinician offsets (FTEs hired and paid through the study to work in the ARS and offset research clinician study-related efforts) was reduced. Contracts for the study clinician offsets ended in January 2015. The participant coordinator remained on as a contract employee of the study, remaining on an hourly, as-needed basis, to

conduct follow-up assessments with participants and to conduct study close-out activities through the first NCE year.

The PI did not make any visits to the ARS during this project year, as no active treatment was conducted for the trial and only follow-up assessments were being conducted. The PI is self-funding a trip on 27 June 2017 to the ARS to present the findings of the study to command and clinical staff and thank them for their involvement in the study.

The task list from the project's SOW is listed below in an effort to provide a task by task status update on progress made in the study, as well as to provide updated revisions to the anticipated timeline of various tasks. Complete status updates and revised timelines therein are included in italics following the original task from the SOW.

Task 1: Prepare study manuals for CAMS and Enhanced Care as Usual (E-CAU) Groups. (Year 1, Months 1-6).

Completed. Following the initial trial implementation, minor revisions to these manuals have been made in accordance with feedback from the research clinicians and from the CUA fidelity and adherence team who have been evaluating all sessions in accordance with the SOW. These minor revisions have included obtaining IRB approval to have family members engaged in treatment if the provider determines that this is clinical indicated and to update the CAMS Rating Scale to better capture some aspects of the experimental treatment in the manner that the research clinicians are being evaluated for adherence to the treatment.

1a: Review existing written materials regarding CAMS. (Year 1 Months 1-3)

Completed.

1b: Review existing Usual Care Model at **"*Army Research Site" (hereafter referred to as ARS)*** (Year 1 Months 1-3)

Completed.

1c: Regular (e.g., 2 per month) group meetings regarding key manual components (Year 1 Months 1-5)

Completed.

1d: Condense key components and write text of first drafts (Year 1 Months 2-3)

Completed.

1e: Review of drafts by senior research team members, outside experts, and study clinicians for 1) readability, 2) comprehensiveness, and 3) feasibility (Year 1 Months 3-4)

Completed.

1f: Manual revision based upon feedback to produce final version (Year 1 Months 5-6)

Completed.

Task 2: Hire and train study staff; modifications with training cases. (Year 1 Months 1-6)

Completed.

2a: Select or hire Participant Coordinator (PC), and study therapist FTE to supplement existing *ARS* staffing for study. University of Washington (UW) Co-PI and Research Coordinator (RC) hire research assistant (RA) for follow-up assessments. (Year 1 Month 1-3)

Completed. Participant Coordinator, Research Assistant, and study therapists (1.0 and 0.8 FTE Backfill Clinicians) were hired and trained. The 1.0 FTE Research Assistant, 1.0 FTE Backfill Clinician, and 0.8 Backfill Clinician completed their contracts in Year 4, Month 9, and no longer working at the ARS after the study team successfully completed all participant recruitment.

2b: UW CO-PI and RC train PC and RA in human subjects and other research protections, study policies and procedures, and administering study assessments. (Year 1 Month 2-3)

Completed.

2c: UW Co-PI and RC train ***ARS*** PC in recruiting procedures and develop adaptations to fit *ARS* context and environment (Year 1 Months 1-6)

Completed.

2d: Study therapists are matched to treatment condition and PI and CUA staff train CAMS therapists in CAMS as well as human subjects and other research protection and study policies and procedures (Year 1 Month 3)

Completed.

2e: PC begins recruitment and assessment procedures for training cases in CAMS. UW staff work with PC on effectiveness of recruitment procedures in ***ARS*** context and develop adaptations as needed prior to RCT intent to treat cases. (Year 1 Month 3-6)

Completed.

2f. CAMS and E-CAU clinicians receive training with draft version of manuals and provide feedback to senior research team members (Year 1 Month 3)

Completed.

2f: CAMS study therapists see training cases with supervision and adherence ratings from PI and CUA staff. Modifications to CAMS appropriate to ***ARS*** context are identified, implemented, and codified in supplementary manual for clinical trial (Year 1 Month 3-6)

Completed.

2g: Enhanced Care as Usual (E-CAU) study therapists see training cases to pilot the intervention. Modifications to E-CAU appropriate to ***ARS*** context are identified, implemented, and codified into E-CAU treatment manual. (Year 1 Month 3-6)

Completed.

2h: UW RA begins follow-up assessments with training cases and UW Co-PI, and RC (with consultation from PI, co-PIs, and statistical consultant) develop any modifications to the tracking and assessment procedures, if needed. (Year 1 Month 4-6)

Completed. Follow-up assessments were on-going for the final 8 active participants as the follow-up period is 12 months following recruitment.

2i: UW Co-PI and Denver VA MIRECC Co-PIs (with consultation from PI, ***ARS*** Co-PIs, RC, PC, and statistical consultant) evaluate feasibility and value of assessment battery as implemented with training cases and make needed changes in format, length, etc. to assure a viable assessment battery is established (Year 1 Month 3-6)

Completed.

2k: Final versions of CAMS and E-CAU manuals reviewed with study clinicians (Year 1 Months 5 -6)

Completed. The study team modified the adherence scale (CAMS Rating Scale) for the CAMS condition and submitted a revision for IRB approval which occurred in the second quarter of Year 3. The CAMS Rating Scale-3 (CRS-3) was then fully implemented.

Task 3: Implementation of clinical trial and follow-up of Soldiers of Concern (SOC) (Year 1 Month 7 through Year 4 Month 12)

Completed. All 148 intent-to-treat participants were recruited and treated to completion.

3a: PC recruits study participants and assures fast and efficient randomization and matching to study therapists for first session (Year 1 Month 7 through Year 4 Month 12)

Completed.

3b: CAMS and E-CAU therapists follow their respective manuals to treat randomized participants (Year 1 Month 7 through Year 4 Month 12)

Completed.

3c: UW team conducts follow-up assessments ***using the University of Washington Risk Assessment Protocol (UWRAP) to address suicide risk during follow-up*** *(*Year 1 Month 8 through Year 4 Month 12).

Completed.

3d: ***PI and CUA staff will*** conduct ongoing adherence evaluation of CAMS study therapists and provide feedback and supervision to assure CAMS therapists remain adherent—***consultation by MIRECC Co-PI's will be used on complex cases (e.g., TBI and PTSD)*** (Year 1 Month 7 through Year 4 Month 3).

Completed.

3e: With consultation from statistical consultant, ***the UW site*** establishes final database systems and data entry and cleansing procedures appropriate to data collected. ***All pre-treatment and adherence data will be transported by HIPAA secure means to UW site to be entered and maintained.*** Data entry occurs in an ongoing basis (Year 1 Month 7 through Year 4 Month 12).

Completed.

3f: With assistance of the PC and *ARS* co-PIs establish and implement procedures for reviewing Army records for study participants and extracting this data ***which will be transported by HIPAA secure means to UW site. This data will be matched to study collected data in consultation with UW PI and statistical consultant.*** With consultation of PI, Co-PIs, and statistical consultant, the data and procedures used to extract medical records will be reviewed and modifications made, if needed, to assure viable data extraction access and procedures are established (Year 2 Month 1-12).

Completed.

Task 4: Hiring and training of additional or replacement staff, if needed (Years 2-4)

4a: PI provides CAMS training to any additional or replacement CAMS study therapists, if needed, to assure sufficient flow through clinical trial (Year 2 Month 1 and Year 3 Month 1). Supervision of CAMS therapists will continue. (Year 2 Month 1 through Year 4 Month 3).

Completed. Throughout the course of the study, supervision and consultation with CAMS therapists was on-going, with the CUA team providing 1-hour long, weekly conference calls to the CAMS therapists.

Task 5: Data analysis and dissemination of results (Years 3 and 4)

Completed analyses of primary outcomes and initial journal manuscript were submitted in February 2017 and received an initial review; the editorial status of the outcome manuscript is "minor revision" and the revised manuscript was submitted on 6 June 2017. Additional moderator analyses are on-going and a second manuscript will be prepared this summer for publication. There will be many future manuscripts in the years to come using data from this RCT.

5a: Aim I: In consultation with PI, Co-PIs, and statistical consultant, Denver VA MIRECC Co-PIs will analyze data from ongoing follow-up of suicidal individuals enrolled in trial to establish a recommended assessment battery from the briefest possible

screening tools through an expanded assessment. Data will be compared with that collected in Army record to evaluate the reliability and validity of Army measures as compared to full research battery. (Years 3 and 4)

Completed. Initial data baseline analyses were completed and initially presented at the 2015 American Association of Suicidology conference in Atlanta, GA and at the 2016 Military Health Research Symposium in Orlando, FL. Several journal articles using data from this study were published in Military Behavioral Health at the invitation of the journal editor. Please refer to the Appendix for the complete listing of various academic projects, professional presentations, and scholarly journal articles that used data from this study.

5b: Presentations, reports, publications prepared reflecting analyses of Aim 1 (Years 3 and 4)

Completed. Please refer to Appendix.

5c: Aim II: In consultation with PI, co-PIs, and statistical consultant, Denver VA MIRECC Co-PIs will analyze clinical trial data to evaluate effectiveness of CAMS from hypotheses (Year 4)

Completed. Please refer to Appendix.

5d: Presentations, reports, and publications will be prepared reflecting the clinical trial results of Aim II hypotheses. (Year 4)

Completed. Please refer to Appendix.

KEY RESEARCH ACCOMPLISHMENTS: Bulleted list of key research accomplishments emanating from this research.

- The experimental results of this RCT were largely unexpected as *both* arms of the study demonstrated mostly comparable improvements over time across all outcome measures (i.e., generally “large effects” as per Cohen, 1988).

- There were significant and sustained post-baseline reductions in SI and suicide attempt behaviors across all follow-up assessments. Notably, CAMS reduced the probability of any SI at 3-month follow-up in comparison to E-CAU by 21% (but this between-group difference was not maintained at future assessment time points). It should be noted, however, that the rapid reduction of suicidal ideation within 3 months seen in the current study is a robust replication of similar SI reduction data from a non-randomized comparison control trial of n=52 suicidal US Air Force airmen (Jobes et al., 2005).

- The research team finalized a new version of the “Suicide Status Form” (SSF) to be used in this study, the SSF-IV. The SSF is a multi-purpose clinical tool used for CAMS-based assessment, treatment, tracking, and the full range of clinical outcomes—it serves as the “roadmap” that guides this suicide-specific clinical intervention.

- The research team developed a revised manual for conducting CAMS with patients who are suicidal that was tailored to working with a military population.

- The research team developed a revised version of the “CAMS Rating Scale” (CRS-3) which is the key adherence tool used by the study team to ensure experimental fidelity within the larger research design and adherence to CAMS within the experimental condition. Psychometric research on validity and reliability of the CRS-3 has been completed as part of a doctoral dissertation (Corona, 2016) and a manuscript of these results is in final preparation to be submitted for publication.

REPORTABLE OUTCOMES: Provide a list of reportable outcomes that have resulted from this research to include: manuscripts, abstracts, presentations; patents and licenses applied for and/or issued; degrees obtained that are supported by this award; development of cell lines, tissue or serum repositories; infomatics such as databases and animal models, etc.; funding applied for based on work supported by this award; employment or research opportunities applied for and/or received based on experience/training supported by this award

The most notable reportable outcome is the manuscript of the analyses of the research trial's primary outcomes that is included in the Appendix: "A Randomized Controlled Trial of the Collaborative Assessment and Management of Suicidality versus Enhanced Care as Usual with Suicidal Soldiers"—as previously noted this manuscript has been re-submitted (6 June 2017) under the status of "minor revision" to a peer review psychiatry journal.

A number of secondary analysis studies have emerged from the OWL data set. For example, at the 2015 annual conference of the American Association of Suicidology the University of Washington Co-PI, Dr. Comtois, led a Research Symposium entitled "Predictors of Suicidality Among Help-Seeking Active Duty Military and OEF/OIF Veterans: Analysis of Baseline Data from Current Clinical Trials" wherein the PI and another Co-PI (Dr. Gutierrez) of the OWL study also presented. To our knowledge this collaborative research effort has been unique in the history of suicide research in that research PI's across six DoD-funded studies collaboratively "pooled" their de-identified subsets of data into one large dataset in an effort to better understand suicidal risk among cross section of active duty service members (across branches, including reserve components) and veterans. This collaborative research activity was approved by all the respective IRB's involved in with these studies. By pooling shared data a total sample of n=1465 was

created that was analyzed in relation to various quasi-independent variables developed by the PI's of these studies. For example, this research investigated suicide ideation and behaviors in relation to gender effects, the role of suicide attempt behaviors (prior to and subsequent to enlistment and deployments), pre-enlistment behavioral health histories, and the potential impact of combat, trauma, and traumatic brain injuries. This collaborative baseline research effort yielded four publications (that included OWL data) in a special edition of *Military Behavioral Health* (the citations and abstracts of these four studies are listed in Appendix B). Beyond ground-breaking research, this kind of pooled investigation has provided vital data relevant to clinical practices, systems of care, and can also provide invaluable guidance to DOD and VA leadership as to how to best respond to the myriad challenges of preventing active duty service member and veteran suicides.

CONCLUSION: Summarize the results to include the importance and/or implications of the completed research and when necessary, recommend changes on future work to better address the problem. A "so what section" which evaluates the knowledge as a scientific or medical product shall also be included in the conclusion of the report.

Generally speaking, the experimental results of this RCT treating 148 suicidal Active-Duty Soldiers were largely unexpected as *both* arms of the study demonstrated mostly comparable improvements over time across all outcome measures (i.e., generally “large effects” as per Cohen, 1988). There were significant and sustained post-baseline reductions in SI and suicide attempt behaviors across all follow-up assessments. Notably, CAMS reduced the probability of any SI at 3-month follow-up in comparision to E-CAU by 21% (refer to Figure 2 in the manuscript that appears in Appendix A). This finding was valuable in that it replicated previous military data in a non-randomized controlled trial with suicidal Airmen similarly showing dramatic reductions in suicidal ideation within 3 months (Jobes et al., 2005). However, this experimental difference was not maintained at the remaining assessment time points.

Beyond the elimination of SI at 3 months caused by CAMS, the within-group improvements from baseline to 1-, 3-, 6-, and 12-month assessments were nearly all statistically significant with respect to SA, suicide-related ED visits, behavioral-heath ED visits, suicide-related IPU days, behavioral health-related IPU days, mental health, overall psychiatric symptom distress, and resiliency. In other words, Soldier-participants in this study reporting high levels of SI at baseline improved and sustained their improvments across the board on all measures within both arms of the trial. Consequently a rather stark “floor effect” emerged within some of the study outcomes (e.g., SA) which made it difficult to detect significant differences. For example, there were 9 SA’s among 148 suicidal participants across the entire follow-up period that

were equally distributed across both arms. This remarkably low incidence of SA's is in marked contrast to the number of attempts otherwise seen in comparable suicide RCT research of an Army sample (c.f., Rudd et al., 2015).

Finally, we saw no impact of adherence to CAMS having any differential treatment effect. This may be largely due to limited variability between the CAMS providers on the CRS (Corona, 2016). Indeed, we observed that each CAMS provider in the study achieved adherence with their first Soldier within four sessions and they remained adherent throughout the study with little drift. In addition, fidelity reviews of recordings of E-CAU providers showed that these providers were "not doing CAMS."

As noted above, participants improved within this trial no matter which condition they were seen. After due consideration, we have wondered if our efforts to increase the internal validity within this RCT may have inadvertently resulted in E-CAU being *too enhanced*. In hindsight, the care provided in E-CAU was likely influenced by the fact that all sessions were digitally recorded and potentially observed by the research team. In other words, it is possible that E-CAU was not truly "typical" clinical care that might otherwise be routinely performed in the majority of military treatment facilities (refer to DoD Task Force, 2010). While it is impossible to know whether this explantion for our findings is true, we nevertheless do know that this RCT was conducted with notable experimental rigor and high retention to follow-up. However, it should also be noted that in comparison to other suicide-specific treatment studies (e.g., Brown et al., 2005; Rudd et al., 2015) a 12 month follow-up period might have been simply too short of an assessment window to ascertain any potential impact on SA behaviors. Perhaps relying

on a relatively high level of self-reported SI instead of recruiting those with a recent SA decreased our ability to detect SA as a study-related outcome variable.

In conclusion, suicide is a major public health issue that affects the larger population and disproportionally impacts men and women who serve in our military. With few proven clinical treatments, it is vital that we continue to study suicide-specific care through rigorous RCTs. The OWL study endeavored to do so and our findings—while mixed—still make a case for CAMS to be further considered as an effective treatment for suicide risk (particularly suicidal ideation) within military treatment facilities.

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APPENDIX A.

Primary Outcomes Manuscript

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A Randomized Controlled Trial of the Collaborative Assessment and Management of Suicidality versus Enhanced Care as Usual with Suicidal Soldiers

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Abstract

Objective: This study describes a randomized controlled trial called "Operation Worth Living" (OWL) which compared the use of the Collaborative Assessment and Management of Suicidality (CAMS) to enhanced care as usual (E-CAU). We hypothesized that CAMS would be more effective than E-CAU for reducing suicidal ideation (SI) and suicide attempts (SA), along with secondary behavioral health and health care utilization markers for U.S. Army Soldier outpatients with significant SI (i.e., >13 on Beck's Scale for Suicide Ideation). *Method:* Study participants were 148 Soldiers who presented to a military outpatient behavioral health clinic. There were 73 Soldiers in the experimental arm of the trial who received adherent CAMS; 75 Soldiers received E-CAU. Nine *a-priori* treatment outcomes (SI, past year SA, suicide-related emergency department (ED) admits, behavioral health-related ED admits, suicide-related inpatient psychiatric unit (IPU) days, behavioral health-related IPU days, mental health, psychiatric distress, resiliency) were measured through assessments at Baseline and at 1, 3, 6, and 12 months post-Baseline (with a 78% retention of intent-to-treat participants at 12 months). *Results:* Soldiers in both arms of the trial responded to study treatments in terms of all primary and secondary outcomes (effect sizes ranged from 0.63 to 12.04). CAMS participants were significantly less likely to have any suicidal thoughts by 3 months in comparison to those in E-CAU (Cohen's $d = 0.93$, p=.028). *Conclusions:* Soldiers receiving CAMS and E-CAU significantly improved post-treatment. Those who received CAMS were less likely to report SI at 3 months; further group differences were not otherwise seen.

A Randomized Controlled Trial of

the Collaborative Assessment and Management of Suicidality

versus Enhanced Care as Usual with Suicidal Soldiers

With 44,193 deaths per year in the United States, suicide is the 10th leading cause of death and poses a major public health issue (Xu, Murphy, Kochanek, & Arias, 2016). Among Americans, an estimated 1.3 million adults attempted suicide in the past year and 9.3 million adults reported suicidal thoughts in the past year (Centers for Disease Control and Prevention, 2015). The United States Army has recently been particularly plagued with dramatic increases in suicide rates since 2008 (Schoenbaum et al., 2014; Ursano et al., 2014).

Given these striking data, it is important to note that there are remarkably few clinical treatments proven through randomized controlled trials (RCT's) to be effective for suicide risk (Jobes, Au, & Siegelman, 2015). To date, replicated RCTs have shown only three major approaches to be effective for specifically treating suicide risk. These interventions include: Dialectical Behavior Therapy (DBT; Linehan, 1993; 2015), two forms of suicide-specific cognitive-behavioral therapy (CBT) — Cognitive Therapy for Suicide Prevention (CT-SP; Brown et al., 2005; Wenzel, Brown, & Beck, 2009) and Brief Cognitive Behavior Therapy (B-CBT; Rudd et al., 2015) — and the Collaborative Assessment and Management of Suicidality (CAMS; Jobes, 2006; 2016). CAMS is an evidence-based suicide-specific therapeutic framework that targets and treats patient-defined "suicidal drivers" and has shown promise with suicidal military personnel (Jobes, Wong, Conrad, Drozd, & Neal-Walden, 2005). To date, CAMS has been shown through RCTs to be effective in rapidly reducing SI and symptom distress while increasing hope (Comtois et al., 2011); CAMS appears to be promising for effectively treating self-harm and SA as well (Andreasson et al., 2016). With seven non-randomized published trials

showing replicated effects for SI, overall symptom distress, depression, and cognitions related to suicide, there is increasingly robust evidence in support of CAMS (Jobes, 2006; 2016).

Considering The Joint Commission's (2016) recent Sentinel Event Alert to "Detect and Treat Suicidal Ideation in All Settings" there is a significant and pressing need for easy-to-train suicide-specific care, which is reliable, efficient, and effective for known high-risk populations. Consistent with this policy emphasis, the present randomized controlled clinical effectiveness trial comparing CAMS to enhanced care as usual (E-CAU—see below in method section) as an outpatient treatment for SI in a U.S. Army treatment facility was pursued. We hypothesized that adherently used CAMS would be more effective than E-CAU for reducing SI and SA, as well as a number of secondary behavioral health and health care utilization markers (i.e., suicide- and behavioral health-related emergency department admits and inpatient psychiatric unit days).

Method

Setting

This study was conducted within the Department of Behavioral Health, at an Army Medical Center on an Infantry military installation. Behavioral health clinicians, clinic chiefs, and other medical staff referred suicidal Soldier participants. All study procedures were reviewed and approved by Department of Defense IRB and Human Research Protection Office (HRPO) as well as University of Washington, The Catholic University of America, and Denver Veterans Affairs institutional review boards. A Data Safety Monitoring Board (DSMB) oversaw the study.

Patient Participants

Active Duty U.S. Army Soldiers (N = 148) who spoke English, were at least 18 years of age, and had significant SI (defined as index score of 13 or higher on the Scale for Suicidal Ideation-Current [SSI-C; Beck, Brown, & Steer, 1997; Comtois et al., 2011]) were included in

this study. Exclusion criteria were: (a) inability to understand, consent, or benefit from study procedures due to significant psychosis, paranoia, cognitive impairment, or where psychosocial therapeutic care was otherwise contra-indicated; (b) a judicial order to treatment; or, (c) separation, change of station, or deployment expected in the next twelve weeks. At the request of our military collaborators the following individuals were also excluded: (a) Soldiers in the Warriors in Transition Unit; and (b) pregnant Soldiers.

Therapist Participants

All eligible on-site clinicians were oriented to the study and invited to participate and fourteen therapists (45% of those approached) consented to participate. All nine study clinicians were clinical social workers (9% of those approached), two dropped out after consent without specifying a reason; three left the clinic before a participant was referred. To assure sufficient staffing to support the study, two additional clinicians were hired by the study. They were recruited, hired and managed by the same leadership as clinic therapists to maximize their equivalence to existing staff. Therapists were initially assigned to treatment condition to maximize their allegiance to their current approach to treating suicidal patients (Care as Usual or CAU). Therapists with lower allegiance were assigned to CAMS so E-CAU clinicians had high allegiance to CAU. Selecting in this manner assured high allegiance of control clinicians to their existing approach, thereby maximizing expectancies and minimizing between-group contamination leading to more generalizable results (Comtois et al., 2011).

Study Treatments

CAMS. Soldiers were offered clinical care guided by the Collaborative Assessment and Management of Suicidality approach (Jobes, Comtois, Brenner, Gutierrez, & O'Connor, 2016; Jobes, 2016). CAMS is a suicide-specific therapeutic framework that employs the use of a multi-

purpose assessment, treatment-planning, tracking, and outcome tool called the “Suicide Status Form” (SSF). Central to CAMS is an empathic and collaborative assessment and treatment planning approach to suicide risk throughout care. Starting at the index session, CAMS uses the “CAMS Stabilization Plan” to reduce access to lethal means and increase coping strategies; CAMS also targets and treats patient-defined suicidal “drivers” using appropriate clinical interventions (e.g., exposure treatment for a PTSD-related driver or couples therapy for a marriage-related driver). CAMS is concluded after three consecutive sessions when suicidal thoughts, feelings, and behaviors are successfully managed per CAMS resolution criteria (seee Jobes, 2016). The PI and his team reviewed video recordings of CAMS sessions using the “CAMS Rating Scale” (CRS) to establish initial adherence and then spot-checked 10% of cases for any “drift” in CAMS adherence (Corona, 2016). There was no drift in the study.

E-CAU. Soldiers were offered typical treatment provided by on-site military clinical social workers. These clinicians had a broad range of training experiences and approaches to working with the Soldiers who were randomized to their care. Like the CAMS providers, the PI and his team monitored E-CAU recorded sessions using the CRS to ensure that control clinicians were *not* doing CAMS (i.e., scoring less than three on the CAMS Rating Scale (the measure used to determine CAMS adherence)). E-CAU was considered resolved once the clinician was satisfied that the primary reason for the referral to E-CAU was resolved. To increase experimental internal validity, CAU in this study was “enhanced” (i.e., E-CAU) in three ways. First, all E-CAU therapists agreed to have all sessions recorded for potential checks (to verify they were not doing CAMS). Second, E-CAU providers offered participants at least one weekly treatment session and tried to assure that treatment lasted at least four weeks to match the minimum amount of care provided in the CAMS arm. Third, E-CAU clinicians were offered the

option of regular clinical consultation (above and beyond clinic supervision) comparable to CAMS. Thus, E-CAU was designed to balance and minimize threats to both the internal and external validity of the study.

Protocols Common to All Treatment Conditions

All study interventions were conducted at least until resolution of the problem (as defined by that treatment condition). After a study-related problem was resolved, therapists in both arms could continue to see the participant, refer the participant for treatment of other issues, or discharge the participant from treatment according to each provider's professional judgment and standard clinic policies and procedures. Medications were provided by the same psychiatrists or other prescribing clinicians in both arms (primarily within Behavioral Health but possibly through Primary Care or other medical services). Prescribing providers conducted pharmacotherapy according to standard policies and procedures in both treatment conditions.

Protocol to Prevent Cross-Contamination between Conditions

No E-CAU provider had previous training in CAMS. CAMS therapists did not discuss their CAMS participants at the team meetings with E-CAU clinicians. Any issues of concern for CAMS providers were addressed in the CAMS group consultation that was part of this study (or, if medication-related, with the participant's prescriber outside of the meetings). CAMS adherence ratings were conducted on therapist's initial sessions and a 10% sample of ongoing sessions and confirmed they were using CAMS (experimental group) or not using CAMS (control group) across the duration of the study treatment.

Measures

Scale for Suicide Ideation-Current (SSI-C). The SSI-C (Beck et al., 1997) is an interviewer-administered scale that measures a participant's SI at its worst point in the past two

weeks. The SSI-C demonstrates strong reliability and validity assessing current SI among psychiatric patients (Cronbach's alpha = .89; Beck, Brown, & Steer, 1997; Beck et al., 1979). To reduce assessment burden, the first five SSI items were administered to all participants but the remaining 14 items were not administered to participants with no SI on any of the first five items (i.e., if items 1-5 are all zero, items 6-19 are also coded zero providing a total score of 0 for the measure). The responses were summed to create an index of SI ranging from 0 to 38, with higher scores reflecting greater ideation and this measure was used at all study time points.

Suicide Attempt Self-Injury Count (SASI-Count). The SASI-Count (Linehan & Comtois, 1996; Linehan, Comtois, Brown, Heard, & Wagner, 2006) is a brief interview covering past self-inflicted injuries categorizing them into suicide attempts (SA) and non-suicidal acts. The tool also creates counts of self-inflicted injuries by method, medical risk severity, and lethality. It has a Lifetime form and a Recent form which covers a specific assessment period. The Lifetime and Recent version (for the past year) were conducted at Baseline. Follow-up assessments were conducted with the Recent version (for the period since previous assessment). Interviewer ratings on the SASI-Count are the same as in the Suicide Attempt Self-Injury Interview which has shown strong psychometrics (e.g., (Cronbach's alpha reliability = .85; Linehan et al., 2006).

Structured Clinical Interview for DSM-IV (SCID). The SCID (First, 1997b) is a diagnostic instrument based on DSM-IV diagnostic criteria for Axis I disorders. The SCID has been demonstrated to have good reliability, with Kappa values ranging from .40-.84, with a mean of .61 for all disorders across a large number of samples (First, 1997b). Test-retest reliabilities for disorders in psychiatric patients range from .54-.84 with a mean of .73. In addition, the *Structured Clinical Interview for DSM-IV Axis II Borderline Personality Disorder* (First, 1997a)

was used to identify participants with Borderline Personality Disorder given the suicide risk associated with this disorder. This interview was conducted after the Baseline assessment and within one month of starting study treatment.

Treatment History Interview–Military (THI-M). The THI-M (Linehan, 1996) was an interviewer administered measure used to capture the participant's use of health and behavioral health services. The THI-M is a briefer version of the full Treatment History Interview (THI) adapted for a military health care system. The THI has high convergent validity with hospital records and psychotherapist reports. This measure was used at all time points throughout the study. At the Baseline assessment, health and behavioral health services were assessed for the previous year. Subsequently, health and behavioral health services were assessed from the previous assessment. To improve data quality in this study, a review of the military electronic health record for the relevant time period was conducted prior to each assessment and used to prompt and clarify services with the participant during the interview.

Connor-Davidson Resilience Scale (CD-RISC). The CD-RISC (Connor & Davidson, 2003) is a 25-item questionnaire regarding attitudes toward coping with adversity; it has high internal consistency (Cronbach's alpha = .89) and test-retest reliability (ICC = .87) as well as convergent and divergent validity (Connor & Davidson, 2003). The responses were summed to create an index of resiliency ranging from 0 to 100, with higher scores reflecting greater resiliency. This measure was used at all time points throughout the study.

Outcome Questionnaire-45 (OQ-45). The OQ-45 (Lambert et al., 1996) is a 45-item questionnaire designed to measure key areas of mental health functioning. Subscales correlated between moderate to high ranges across scales: symptoms (r = .78, Cronbach's alpha = .91), interpersonal problems (r = .80, Cronbach's alpha = .74), and social role functioning (r = .82,

Cronbach's alpha = .71; Lambert et al., 1996). The OQ-45 is a widely accepted tool for identifying, tracking, and measuring behavioral health treatment outcomes (Maruish, 2001) and possesses good overall psychometric properties across adults from a counseling center, community clinic, and psychiatric inpatient (Umphress, Lambert, Smart, Barlow, & Clouse, 1997). The responses were summed to create an index of psychiatric distress ranging from 0 to 180, with higher scores reflecting greater distress. This measure was used at all time points throughout the study.

Short Form-36 version 2 (SF-36). The Medical Outcomes Study SF-36 (Ware et al., 1993) contains 36 self-report items yielding a physical and a mental health summary score, as well as eight individual scales (Ware et al., 1993). In various populations, internal consistency for the scales has been shown to be at least .70 and the SF-36 has been widely used in Veteran populations (Voelker et al., 2002). The present study focused on the mental health subscale scores which range from 0 to 100; higher scores reflect better overall mental health. This measure was used only at the Baseline assessment before randomization.

Procedures

Recruitment. Clinicians contacted the on-site research coordinator (RC) to arrange screening of interested suicidal Soldiers as soon as possible (i.e., appointments were scheduled as soon as possible given their mental status, clinical care, and release to come to the clinic). The RC described the study and conducted informed consent and then confirmed that potential participants met the inclusion and exclusion criteria. Eligible participants then completed the Baseline assessments, were randomized, and the participant was scheduled for their initial session of study treatment.

Randomization. Given the moderate sample size, a minimization strategy rather than stratification random strategy was used to assign Soldiers to conditions. This strategy for random assignment to condition was developed specifically for research studies where the number of matching criteria is large relative to the number of participants in a study (Freedman & White, 1976; Pocock & Simon, 1975; White & Freedman, 1978). Eligible participants were matched on four primary variables: (a) history of SA (0 versus1 versus2+); (b) polypharmacy as an indicator of psychiatric complexity (0-2 versus3+ current medications); (c) severity of physical injury/disability defined as SF-36 Physical Functioning Score indicating average to high functionality ($\geq$ 41) versus below-average functionality ($\leq$ 40); and, (d) already enrolled in Behavioral Health outpatient treatment as defined by appointments attended at the clinic within the past eight weeks and an upcoming appointment scheduled (yes versus no).

Follow-up assessments. Outcome assessments were conducted 1, 3, 6, and 12 months after Baseline and consisted of three parts: (a) a "blind" assessment interview regarding SI (i.e., SSI-C), suicidal behavior (i.e., SASI-Count), and crisis services received by the participant (i.e., the Crisis/Medical section of the THI-M); (b) a "non-blind" assessment of outpatient services received (i.e., THI-M), including the study treatment (which could break the blind); and (c) an online survey of the questionnaires (i.e., CD-RISC and OQ-45). Independent assessors conducted the "blind and non-blind" assessments.

Remuneration. By regulation it was not possible to pay Active Duty Army personnel for their participation in the research assessments. However, all study participants received a custom-made military coin at the 3-month follow-up assessment to thank them for participation. If a participant separated from the U.S. Army in the course of the study, that participant was paid $20 for each outcome assessment following separation. These separated participants were also

given an additional incentive payment of $5 if they called to schedule their next appointment and $5 if they completed their assessment when originally scheduled (i.e., a total maximum of $30 if they called to schedule the assessment and completed when scheduled).

Data Analyses

To evaluate the impact of CAMS versus E-CAU, longitudinal regression analyses were conducted using generalized linear mixed modeling (GLMM). All study participants who were randomized and completed a Baseline assessment were included in the primary outcome analyses (i.e., an intent-to-treat approach). The *a priori* study outcomes were: (a) SI; (b) SA; (c) suicide-related emergency department (ED) visits; (d) behavioral health-related ED visits; (e) any suicide-related inpatient unit (IPU) admission; (f) any behavioral health-related IPU admission; (g) mental health (SF-36); (h) resiliency (CD-RISC); and, (i) overall symptom distress (OQ-45). The ED and IPU visit variables were dichotomized into no visits versus one or more visits because of low post-Baseline rates above one. SA were also combined from Baseline through 12 months due to very low frequencies at each assessment point. Each outcome variable was regressed on treatment (CAMS versus E-CAU), time and the treatment by time interaction in separate GLMM models. The time variable was divided into four planned contracts: (a) month 1 versus Baseline; (b) month 3 versus Baseline; (c) month 6 versus Baseline; and (d) month 12 versus Baseline. Logistic and Gaussian GLMMs were used for binary and relatively normally distributed variables, respectively.

The primary SI outcome (SSI) had a positively skewed distribution and many zeroes. For this outcome we used a two-part regression model known as a hurdle model (Atkins, Baldwin, Zheng, Gallop, & Neighbors, 2013), which assumes that a threshold must be crossed from zero into positive values. The hurdle model approach effectively divides the SI outcome into two

outcomes, each modeled in its own regression equation. One outcome is a dichotomous variable representing zero SI versus any SI and includes the entire sample. The second outcome represents the degree of SI when there is any SI. Thus, a hurdle model contains two sub-models: (a) a logistic regression for zeroes versus not zeroes; and, (b) a zero-truncated over-dispersed Poisson regression for the distribution of nonzero values. The hurdle model of the SI outcome provided two sets of results corresponding to the impact of treatment on (a) likelihood of any SI (i.e., logit model) and (b) average SI given any SI (i.e., zero-truncated count model). Another characteristic of the SI outcome was that the study inclusion criterion required all participants to have non-zero SI at Baseline, resulting in a problem known as complete separation (Albert & Anderson, 1984), due to no variation in SI at one of the time points, which produces extreme and biased regression estimates. To accommodate this feature of the data, we used a Bayesian approach to GLMM in which Cauchy prior distributions with scale 2.5 were specified where appropriate to restrict regression coefficients away from extreme values, as recommended by Gelman, Jakulin, Pittau, and Su (2008).

We also conducted planned secondary analyses evaluating the association between CAMS adherence and post-Baseline outcomes. Due to a low base rate of SA and the reduced sample size, these secondary analyses only focused on: (a) SI; and, (b) psychosocial outcomes. Post-Baseline measurements of each outcome were regressed on the Baseline measurement of the outcome, therapist, treatment (CAMS versus E-CAU), and adherence in separate models.

Results

Flow of Participants

As shown in Figure 1 depicting the OWL Consort Chart, a total of 255 individuals were screened for eligibility; the final sample consisted of the 148 who completed a Baseline assessment and were randomized, 73 in the CAMS arm and 75 in the E-CAU arm.

Participants

The final sample of 148 participants ranged in age from 18 to 48 years (M = 26.8, SD = 5.9). Other characteristics of the sample are shown in Table 1. As expected with a military sample, participants were mostly male (80%). Half (53%) were white, 24% African American, 11% Asian or Pacific Islander, and the remaining 11% other ethnicities. The majority was junior enlisted (70%), a sizable portion (42%) had never deployed, and 14% had deployed three or more times. Half of the participants reported at least one lifetime suicide attempt, with over a quarter of participants (27%) reporting multiple attempts. There were no statistically significant differences in sociodemographic characteristics or Axis I clinical diagnosis rates between treatment conditions, indicating that randomization was successful (see Table 1).

Missing Data

Across the 9 primary study outcomes, the overall rate of missing data over the five assessments was 13% and comparable to the 9% median rate (Range = [0, 70%]) of missing data found in a recent review of clinical trials by Bell, Fiero, Horton, and Hsu (2014). Just under half of the participants had complete data from all five assessments (44%, n = 65), 25% (n = 37) were missing a single assessment, and 31% were missing multiple assessments (n = 46). Each socio-demographic characteristic and Axis I clinical diagnosis was regressed on an indicator for complete versus partial data in separate generalized linear models. There were no statistically significant differences between participants with complete versus incomplete data, with respect to gender, ethnicity, marital status, sexual orientation, education level, rank, number of combat

deployments, lifetime SA, bipolar diagnosis, depressive disorder diagnosis, anxiety disorder diagnosis excluding PTSD, PTSD diagnosis, or drug abuse/dependence diagnosis. At Baseline, participants with incomplete data had a 3.6-fold greater odds of an alcohol abuse or dependence diagnosis (*OR* = 3.58, *95% CI* = [1.24, 10.34], *p* = .019). However, there was no statistically significant difference between treatment conditions in the rates of missing data. Since the GLMM approach utilizes all available data, including from participants with both complete and partial data, missing data should not bias outcome analyses since the rate of missing data was comparable across treatment conditions.

Intervention Participation

As described in the Method section, there was no fixed number of sessions in the CAMS or E-CAU conditions. Ninety-three percent of participants in the CAMS condition and 92% of participants in the E-CAU condition completed the planned minimum of 4 sessions. Participants in the CAMS condition completed from 1 to 26 treatment sessions, with a median of 5 (*Mean* = 6.2, *SD* = 3.9) sessions. E-CAU participants received 0 to 21 treatment sessions, with a median of 5 sessions (*Mean* = 6.4, *SD* = 3.5) sessions.

Forty-four percent of participants in the CAMS condition and 41% of participants in the E-CAU condition also received post-treatment sessions. Participants in the CAMS condition completed from 0 to 35 post-treatment sessions, with a median of 0 sessions (*Mean* = 2.6, *SD* = 5.7). E-CAU participants received from 0 to 22 post-treatment sessions, with a median of 0 sessions (*Mean* = 1.9, *SD* = 3.7). Wilcoxon signed-rank tests did not indicate any statistically significant difference between arms in the number of treatment (*z* = 0.69, *p* = .490) or post-treatment sessions (*z* = -0.40, *p* = .689).

Descriptive Data on Study Outcomes

As shown in Table 2, all participants reported moderate to severe SI at Baseline, consistent with the inclusion criteria. At 1 month, the percentage of any SI among participants who completed an assessment dropped by over a quarter in both conditions, to 73% in the CAMS condition and 69% in the E-CAU condition. At 3 months, the percentage of any SI dropped further to 37% in the CAMS condition versus 61% in the E-CAU condition. By 6 months, the percentage of any SI dropped below 40% in both treatment conditions. In both the CAMS and E-CAU conditions the intensity of SI when non-zero was highest at Baseline and decreased by approximately half after 1 month and remained stable through 12 months. Regarding SA, approximately one-fifth of participants at Baseline reported a past-year suicide attempt (CAMS: 23%; E-CAU: 22%). At 12 months, the percentage of participants reporting a past-year suicide attempt, among those with 12-month SA data (N = 111), dropped to 11% in the CAMS condition (n = 54) and 5% for E-CAU (n = 57).

Primary Intervention Outcome Analyses

GLMM analyses were used for all intervention outcome analyses, using the regression type appropriate to each outcome (e.g., logistic regression for binary outcomes). Due to a large number of zeroes in the SI (SSI) outcome, hurdle regression was utilized that divided the SSI outcome into (1) the probability of any SI, and (2) the intensity of SI when non-zero. Across the study outcomes, the statistically significant intervention effect of CAMS versus E-CAU conditions was on the lower probability (but not intensity) of SI. Figure 2 summarizes the predicted probability and intensity of SI by time and treatment condition from the hurdle regression model. At 3 months, 37% of participants in the CAMS condition had any SI compared with 61% of participants in the E-CAU condition (Cohen's d = 0.93, p = .028). However, at 6 months there was no longer a statistically significant advantage of CAMS over E-CAU (33%

[CAMS] versus 36% [E-CAU]; Cohen's $d = 0.13$, $p = .769$), nor at 12 months (38% [CAMS] versus 40% [E-CAU]; Cohen's $d = 0.06$, $p = .895$.

Within each of the treatment conditions, there were consistently robust post-Baseline improvements associated with both CAMS and E-CAU across all outcomes. Table 3 summarizes the within-condition effect sizes for all study outcomes in each arm of the study. The post-Baseline improvements in outcomes ranged from 0.63 to 12.04, the majority of which exceeded Cohen's (1988) $d = 0.80$ threshold for a large effect size. All post-Baseline improvements in study outcomes within CAMS or E-CAU were statistically significant. There was no evidence of greater improvements over time in the CAMS condition compared with E-CAU (i.e., no statistically significant treatment by time effects) for intensity of SI, past-year SA, suicide- or behavioral health-related ED admissions, suicide- or behavioral-health related IPU stays, mental health, resiliency, or overall psychiatric distress.

Secondary Intervention Adherence Analyses

A total of 29 participants in the CAMS condition had at least one therapy session that was rated for therapist adherence to the CAMS intervention. Adherence to CAMS ranged from 3.8 to 6, with an average adherence of 4.8 ($SD = 0.4$) on the 0 (poor) to 6 (excellent) scale (acceptable adherence = 3.0). There were no statistically significant associations between the degree of adherence to CAMS and the probability or intensity of SI or any other psychosocial outcomes.

Discussion

Generally speaking, the experimental results of this RCT treating 148 suicidal Active-Duty Soldiers were largely unexpected as *both* arms of the study demonstrated mostly comparable improvements over time across all outcome measures (i.e., generally "large effects" as per Cohen, 1988). There were significant and sustained post-Baseline reductions in SI and

suicide attempt behaviors across all follow-up assessments. Notably, CAMS reduced the probability of SI at 3-month follow-up in comparision to E-CAU by 21 percentage points (Figure 2); however, this difference was not maintained at future time points. Nevertheless, these data replicate reductions in suicidal ideation seen in a previous military sample (Jobes et al., 2005) and underscore the virtue of focusing treatment on suicidal risk.

Beyond the greater reduction in SI likelihood by 3 months associated with CAMS, the within-group improvements from Baseline to 1-, 3-, 6-, and 12-month assessments were nearly all statistically significant with respect to SA, suicide-related ED visits, behavioral-heath ED visits, suicide-related IPU days, behavioral health-related IPU days, mental health, overall psychiatric symptom distress, and resiliency. In other words, Soldier-participants in this study reporting relatively high levels of SI at Baseline improved and sustained their improvments across the board on all measures within both arms of the trial. Consequently a rather stark “floor effect” emerged within some of the study outcomes (e.g., SA) which made it difficult to detect significant differences. For example, there were 9 recorded SA among 148 suicidal participants , 114 of whom were followed across the entire follow-up period. Six of the 9 SA were in the CAMS condition versus 3 of the 9 in the E-CAU arm, a difference that was not statistically significant. This remarkably low incidence of SA is in marked contrast to the number of attempts otherwise seen in comparable suicide RCT research of an Army sample (c.f., Rudd et al., 2015).

Addtionally, we saw no impact of adherence to CAMS having any differential treatment effect. This may be largely due to limited variability between the CAMS providers on the CRS (Corona, 2016). Indeed, we observed that each CAMS provider achieved adherence with their first Soldier within four sessions and they remained adherent throughout the study with little

drift. In addition, fidelity reviews of recordings of E-CAU providers did not suggest that key elements of the CAMS framework were implemented in the control arm.

Finally, we would like to address the limitations of the current study. As noted above, participants improved within this trial no matter in which condition they were seen. After due consideration, we wonder if our efforts to increase the internal validity of this RCT may have inadvertently resulted in E-CAU being *too enhanced*. In hindsight, the care provided in E-CAU was perhaps influenced by the fact that all sessions were digitally recorded and potentially observed by the research team. In other words, it is possible that E-CAU was not truly "typical" clinical care that might otherwise be routinely performed in the majority of military treatment facilities (e.g., a mental disorder focus versus a suicide-specific focus—refer to DoD Task Force, 2010). While it is impossible to know whether this explantion for our findings is true, we nevertheless do know that this RCT was conducted with experimental rigor and high retention to follow-up. However, it should be noted that in comparison to other suicide-specific treatment studies (e.g., Brown et al., 2005; Rudd et al., 2015) a 12 month follow-up period might have been simply too short of an assessment window to ascertain any potential impact on SA behaviors. Perhaps relying on a relatively high level of self-reported SI instead of recruiting those with a recent SA decreased our ability to detect SA as a study-related outcome variable.

In conclusion, suicide is a major public health issue that affects the larger population and disproportionally impacts men and women who serve in our military. With few proven clinical treatments, it is vital that we continue to study suicide-specific care through rigorous RCTs. The OWL study endeavored to do so and our findings—while mixed—make a case for CAMS to be further considered as an effective treatment for suicidal risk in military treatment faciliities.

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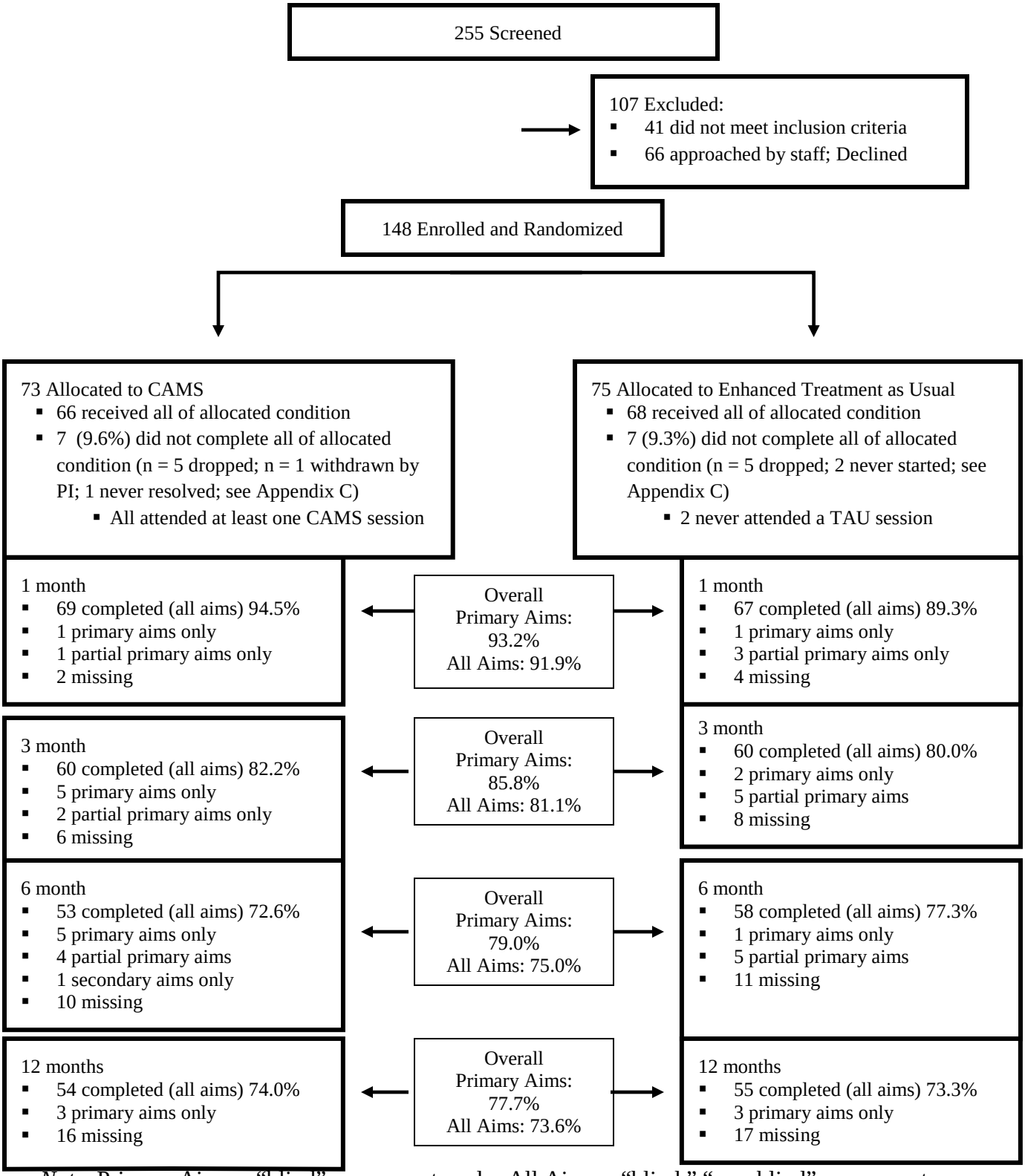
Figure 1. *OWL Consort Chart: Intent-to-Treat Phase.*



Note. Primary Aims = "blind" assessments only; All Aims = "blind," "non-blind" assessments, and on-line questionnaires *characteristics: Overall and by Treatment Condition*

Table 1

Baseline Sociodemographic and Clinical Characteristics: Overall and by Treatment Condition

	Overall		CAMS		E-CAU	
	N	**%**	***n***	**%**	***n***	**%**
Socio-demographics						
Gender						
Male	119	80.4	56	76.7	63	84.0
Female	29	19.6	17	23.3	12	16.0
Ethnicity						
White/Caucasian	75	53.2	37	51.4	38	55.1
Black/African American	34	24.1	17	23.6	17	24.6
Latino/a	15	3.6	12	16.7	3	4.3
Asian or Pacific Islander	5	10.6	2	2.8	3	4.3
Other	12	8.5	4	5.6	8	11.6
Marital Status						
Single, never married	38	26.0	20	28.2	18	24.0
Married	74	50.7	35	49.3	39	52.0
Separated or Divorced	33	22.6	16	22.5	17	22.7
Widowed	1	0.7	0	0.0	1	1.3
Sexual Orientation						
Heterosexual	120	85.1	60	85.7	60	84.5
Bisexual	17	12.1	7	10.0	10	14.1
Homosexual	4	2.8	3	4.3	1	1.4
Education						
Some high school	1	0.7	1	1.4	0	0.0
High school graduate or GED	57	39.0	30	42.3	27	36.0
Some college, AA, or technical training	77	52.7	33	46.5	44	58.7
Bachelor’s or graduate degree	11	7.5	7	9.9	4	5.3

	Overall		CAMS		E-CAU	
Rank						
Junior Enlisted (E1-E4*)	103	69.6	51	69.9	52	69.3
Non-Commissioned Officer (E5-E9**)	41	27.7	21	28.8	20	26.7
Officer (W2-O3)	4	2.7	1	1.4	3	4.0
Number of Combat Deployments						
0	61	41.5	31	42.5	30	40.5
1	38	25.9	18	24.7	20	27.0
2	28	19.0	17	23.3	11	14.9
3 or more	20	13.6	7	9.6	13	17.6
Lifetime Suicide Attempts						
None	74	50.0	37	50.7	37	49.3
One	34	23.0	16	21.9	18	24.0
Multiple	40	27.0	20	27.4	20	26.7
Axis I Diagnoses (Current)*						
Bipolar Disorder						
No	134	96.4	68	95.8	66	97.1
Yes	5	3.6	3	4.2	2	2.9
Depressive Disorder						
No	52	37.4	31	43.7	21	30.9
Yes	87	62.6	40	56.3	47	69.1
Anxiety Disorder (excluding PTSD)						
No	71	51.1	37	52.1	34	50.0
Yes	68	48.9	34	47.9	34	50.0
PTSD						
No	67	49.3	37	54.4	30	44.1
Yes	69	50.7	31	45.6	38	55.9
Alcohol Abuse or Dependence						
No	117	84.2	56	78.9	61	89.7
Yes	22	15.8	15	21.1	7	10.3
Drug Abuse or Dependence						

	Overall		CAMS		E-CAU	
No	133	95.7	67	94.4	66	97.1
Yes	6	4.3	4	5.6	2	2.9
Borderline Personality Disorder						
No	100	72.5	49	70.0	51	75.0
Yes	38	27.5	21	30.0	17	25.0

Note. There were no statistically significant differences between treatment conditions with respect to the variables presented in Table 1.

[*] Axis I diagnoses determined by the Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID-I)

Table 2

Study Outcomes by Assessment Point and Treatment Condition

	Overall		CAMS		E-CAU	
	% Any	Mdn > 0 [95% CI]	% Any	Mdn > 0 [95% CI]	% Any	Mdn > 0 [95% CI]
SI (SSI)						
Baseline	100	19.0 [12.0, 31.6]	100	20.0 [12.8, 33.0]	100	19.0 [12.0, 30.1]
1 month	71.0	11.5 [3.4, 22.6]	72.9	13.0 [3.5, 24.5]	69.1	11.0 [4.0, 20.0]
3 months	48.8	10.0 [3.0, 22.0]	36.9	12.5 [2.6, 21.9]	61.3	9.5 [3.9, 20.2]
6 months	36.8	9.0 [2.0, 21.8]	35.1	10.5 [2.0, 22.1]	38.3	9.0 [2.6, 20.3]
12 months	39.1	10.0 [1.0, 21.9]	38.6	10.5 [1.5, 25.8]	39.7	9.0 [1.0, 19.3]
Past-Year SA (SASI)						
Baseline	22.4	1.0 [1.0, 31.4]	23.3	1.0 [1.0, 21.4]	21.6	1.0 [1.0, 20.1]
12 months	8.1	1.0 [1.0, 1.0]	11.1	1.0 [1.0, 1.0]	5.3	1.0 [1.0, 1.0]
Suicide-related ED Admits						
Baseline	36.1	1.0 [1.0, 2.0]	38.4	1.0 [1.0, 2.0]	33.8	1.0 [1.0, 2.8]
1 month	5.6	1.0 [1.0, 1.0]	8.5	1.0 [1.0, 1.0]	2.8	1.0 [1.0, 1.0]
3 months	4.5	1.0 [1.0, 1.9]	3.0	1.0 [1.0, 1.0]	6.0	1.0 [1.0, 1.9]
6 months	7.1	1.0 [1.0, 1.8]	6.5	1.0 [1.0, 1.0]	7.8	1.0 [1.0, 1.9]
12 months	7.0	1.0 [1.0, 1.8]	5.3	1.0 [1.0, 2.0]	8.6	1.0 [1.0, 1.0]
Behavioral health-related ED Admits						
Baseline	38.8	1.0 [1.0, 3.6]	39.7	1.0 [1.0, 2.6]	37.8	1.0 [1.0, 3.3]
1 month	8.5	1.0 [1.0, 2.0]	11.3	1.0 [1.0, 2.0]	5.6	1.0 [1.0, 1.0]
3 months	8.2	1.0 [1.0, 1.8]	6.0	1.0 [1.0, 1.0]	10.4	1.0 [1.0, 1.8]

	Overall		CAMS		E-CAU	
6 months	10.3	1.0 [1.0, 1.7]	6.5	1.0 [1.0, 1.0]	14.1	1.0 [1.0, 1.8]
12 months	9.6	1.0 [1.0, 2.8]	7.0	1.0 [1.0, 1.9]	12.1	1.0 [1.0, 2.7]
Suicide-related IPU days						
Baseline	26.5	7.0 [3.0, 28.3]	31.5	6.0 [3.6, 15.7]	21.6	9.5 [3.8, 31.8]
1 month	4.9	7.0 [4.3, 19.2]	7.0	14.0 [4.2, 19.5]	2.8	6.5 [6.0, 7.0]
3 months	4.5	8.0 [3.5, 18.6]	3.0	6.0 [3.1, 8.8]	6.0	8.0 [7.0, 19.2]
6 months	6.3	5.5 [4.0, 28.9]	4.8	7.0 [4.2, 13.7]	7.8	5.0 [4.1, 29.4]
12 months	7	17.5 [1.2, 33.8]	7.0	16.0 [2.2, 34.5]	6.9	17.5 [1.5, 28.0]
Behavioral health-related IPU days						
Baseline	27.2	7.0 [3.0, 28.1]	31.5	6.0 [3.6, 15.7]	23.0	10.0 [3.8, 31.6]
1 month	4.9	7.0 [4.3, 19.2]	7.0	14.0 [4.2, 19.5]	2.8	6.5 [6.0, 7.0]
3 months	5.2	7.0 [3.0, 18.3]	4.5	3.0 [3.0, 8.7]	6.0	8.0 [7.0, 19.2]
6 months	6.3	5.5 [4.0, 28.9]	4.8	7.0 [4.2, 13.7]	7.8	5.0 [4.1, 29.4]
12 months	7.0	17.5 [1.2, 33.8]	7.0	16.0 [2.2, 34.5]	6.9	17.5 [1.5, 28.0]
	M	**95% CI**	**M**	**95% CI**	**M**	**95% CI**
Mental Health (SF-36)						
Baseline	26.1	[24.8, 27.3]	26	[24.4, 27.8]	26.1	[24.2, 28.1]
1 month	34.9	[32.9, 37.1]	34.2	[31.5, 37.0]	35.7	[32.9, 38.4]
3 months	38.6	[36.3, 40.9]	40.2	[36.6, 43.6]	36.9	[34.2, 39.9]
6 months	39.8	[37.5, 41.9]	40.0	[36.4, 43.7]	39.6	[36.4, 42.7]
12 months	40.0	[37.6, 42.3]	40.6	[37.1, 44.2]	39.4	[36.5, 42.4]
Psychiatric Distress (OQ-45)						
Baseline	97.6	[93.4, 101.3]	96.1	[89.9, 102.6]	99.0	[93.9, 104.5]
1 month	81.9	[77.0, 87.0]	80.4	[72.6, 87.9]	83.3	[75.5, 90.8]

	Overall		CAMS		E-CAU	
3 months	76.5	[70.5, 82.8]	72.9	[63.7, 82.8]	80.2	[72.1, 88.1]
6 months	74.5	[67.6, 81.3]	72.4	[62.5, 82.0]	76.3	[67.9, 84.7]
12 months	71.1	[64.7, 78.1]	70	[60.5, 80.2]	72.2	[63.1, 81.7]
Resiliency (CD-RISC)						
Baseline	51.9	[49.1, 54.5]	52.0	[48.2, 56.1]	51.8	[48.0, 55.6]
1 month	55.8	[53.1, 58.4]	54.2	[50.3, 58.2]	57.5	[53.7, 61.1]
3 months	60.1	[56.9, 63.1]	58.4	[53.8, 62.8]	61.9	[57.7, 66.2]
6 months	61.8	[57.7, 65.5]	59.3	[53.5, 64.9]	64.3	[59.4, 69.4]
12 months	64.7	[61.2, 68.0]	64.5	[59.9, 69.3]	64.8	[60.0, 69.6]

Notes. Mdn > 0 = Median of values greater than zero, M = Mean, CI = Confidence Interval; ED = Emergency Department; IPU = Inpatient Unit; SSI = Scale for SI; SASI = Suicide Attempt Self-injury Interview; SF-36 = 36-item Short Form Survey; OQ-45 = Outcome Questionnaire 45; CD-RISC = Connor-Davidson Resilience Scale

Table 3

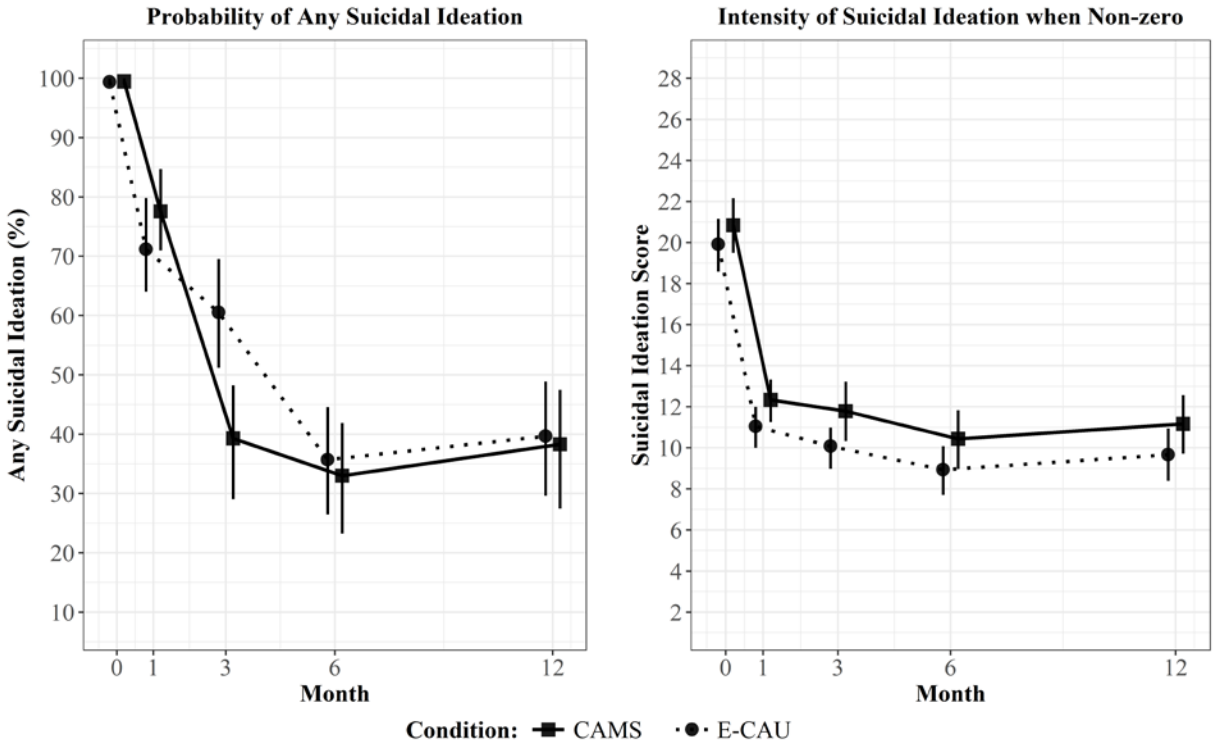
Within-condition Study Outcome Effect Sizes from Baseline (BL) to 1, 3, 6, and 12 months

	CAMS (n = 73)		E-CAU (n = 75)	
	d	***p***	***d***	***p***
Past-year SA (Any)				
BL to 12 months	0.63	.066	1.17	.004
Suicide-related ED Admits (Any)				
BL to 1 month	1.94	< .001	1.29	< .001
BL to 3 months	1.39	< .001	2.04	< .001
BL to 6 months	1.21	< .001	1.48	< .001
BL to 12 months	1.14	.001	1.64	< .001
Behavioral health-related ED Admits (Any)				
BL to 1 month	1.60	< .001	1.15	< .001
BL to 3 months	1.16	< .001	1.61	< .001
BL to 6 months	0.93	< .001	1.57	< .001
BL to 12 months	1.05	.001	1.52	< .001
Suicide-related IPU days (Any)				
BL to 1 month	1.56	< .001	1.27	< .001
BL to 3 months	1.02	< .001	1.89	< .001
BL to 6 months	0.82	.001	1.54	< .001
BL to 12 months	0.92	< .001	1.28	< .001
Behavioral health-related IPU days (Any)				
BL to 1 month	1.63	< .001	1.27	< .001
BL to 3 months	1.08	.003	1.59	< .001
BL to 6 months	0.88	.017	1.54	< .001

BL to 12 months	0.98	.008	1.28	< .001
Mental Health (SF-36)				
BL to 1 month	6.25	< .001	7.45	< .001
BL to 3 months	11.00	< .001	8.45	< .001
BL to 6 months	11.58	< .001	10.95	< .001
BL to 12 months	12.04	< .001	10.74	< .001
Psychiatric Distress (OQ-45)				
BL to 1 month	4.08	< .001	3.66	< .001
BL to 3 months	5.17	.002	5.75	< .001
BL to 6 months	7.13	.008	7.36	< .001
BL to 12 months	7.69	.004	7.42	< .001
Resiliency (CD-RISC)				
BL to 1 month	2.52	< .001	1.31	.156
BL to 3 months	4.77	< .001	3.41	< .001
BL to 6 months	5.63	< .001	4.12	< .001
BL to 12 months	5.86	< .001	6.03	< .001

Note. All Cohen's *d* effect size estimates were in the direction of improvement for all outcomes across all post-Baseline assessment points.

Figure 2: Experimental Main Effect on SI



Note. Predicted Probability and Intensity of SI (SSI) at Baseline, 1, 3, 6, and 12 months by Treatment Condition (CAMS versus E-CAU). Non-overlapping confidence intervals correspond with a statistically significant difference at $p < .05$.

APPENDIX B.

Other Presentations of Data

OWL-Based Doctoral Dissertations:

The Use of Clinical Risk Assessment Coding Systems with Suicidal Soldiers

Doctoral Candidate: Katherine A. Brazaitis, M.A.

Major Professor: David A. Jobes, Ph.D.

Abstract

Suicide is a leading cause of death among United States active duty military wherein there are more deaths due to suicide than combat (Luxton et al., 2011). The majority of suicide deaths occur among Caucasian junior enlisted Soldiers under the age of 35, at rates far greater than those of their civilian counterparts (Bruce, 2010; DOD Task Force on the Prevention of Suicide by Members of the Armed Forces, 2010; Lagana-Riordan, 2015). The present study is the first simultaneous application of three suicide coding systems, "Scale for Suicide Ideation Suicide Index Score" (SSI-SIS; a quantitative ratings index of the wish to live or die), SSF "Suicide Orientation" (classifying qualitative responses for the preoccupation with self or others), and SSF "Suicide Motivation" (a count and comparison of identified reasons for living and dying) to a relatively large sample of suicidal Soldiers. Hypotheses predicted the presence of between-group differences, within each typology, on measures of current suicidal ideation, history of suicide attempts, psychological distress, and resiliency. Results demonstrated that those identified as Wish to Die from the SSI-SIS had greater suicidal ideation than those identified as Wish to Live or Ambivalent. There were no significant between-group differences within the Suicide Orientation typology. Application of the Suicide Motivation typology yielded significant between-group differences on measures of lifetime suicide attempts, psychological distress, and resiliency wherein those coded as Death-Motivated were more symptomatic and less resilient than their Life-Motivated and Ambivalent counterparts.

A Psychometric Evaluation of the CAMS Rating Scale

Doctoral Candidate: Christopher D. Corona, M.A.

Major Professor: David A. Jobes, Ph.D.

Abstract

Suicide is a significant public health concern both domestically and abroad, and rates of suicide in the United States military in particular have risen over the past decade (Bryan, Jennings, Jobes, & Bradley, 2012; Drapeau & McIntosh, 2015; World Health

Organization, 2014). Nonetheless, there have been relatively few outcome studies evaluating the effectiveness of suicide treatments in both the general population and the military in particular (Leenaars, 2011). Of the studies that do exist, many have failed to show significant reductions in outcomes related to suicidal behavior or have significant methodological flaws (Comtois & Linehan, 2006; Ward-Ciesielski & Linehan, 2014). One important methodological consideration when evaluating clinical psychotherapeutic interventions is the role of treatment fidelity, or the extent to which treatments being compared are delivered as intended. Without adequate assessment of treatment fidelity, the ability to draw valid conclusions about the effects of interventions on outcomes is significantly hindered (Kazdin, 2003). Direct observation has been posited as an accurate method of ensuring that providers in different treatment conditions are delivering distinctly different interventions, and that these interventions are being delivered as prescribed (Bellg et al., 2004; Lane et al., 2004; Smith et al., 2007). Moreover, one of the most extensively used methodologies for satisfying direct observation criteria is the creation of a measure that can be used to rate clinician performance with regard to specific components of a particular intervention. Thus, the goal of the current study is to evaluate the psychometric properties of a treatment fidelity measure intended for use in studying a particular suicide-specific intervention. Data for the current study were collected between September 2012 and March 2016 as part of a randomized controlled trial at a U.S. Army installation at Ft. Stewart in Georgia. Clinicians in the trial delivered either the “Collaborative Assessment and Management of Suicidality” (CAMS) or “Enhanced Care -As-Usual” (E-CAU) to suicidal Soldiers. Study sessions were videotaped and viewed by study personnel, who rated the performance of each clinician using the “CAMS Rating Scale” (CRS). These ratings were then used to conduct psychometric analyses that included evaluations of internal consistency, construct validity, and criterion validity. Factor analyses were also conducted to determine the latent variable structure of the CRS, and a generalizability study was conducted to determine to the contribution of variance from different components of the measurement model. Results revealed that the CRS demonstrates high internal consistency, though validity predictions were generally not supported. While the results of factor analyses do not support the organization of the CRS into its current subscales, a latent variable model was identified that differentiates essential from non-essential CAMS components. The generalizability study also shed light on two important characteristics of the CRS: its ability to reliably differentiate CAMS from another treatment (i.e., E-CAU), and its continued demonstration of high inter-rater reliability. These properties establish the CRS as a reliable adherence measure that can play an integral role in demonstrating treatment fidelity within randomized controlled trials evaluating CAMS.

OWL-Based MA-level Research Projects:

Patient Perspectives on Successful Management of Suicide Risk in Military and Civilian Samples

Masters Student: Kaitlyn R. Schuler, M.A.

Research Advisor: David A. Jobes. Ph.D.

Abstract

Patients and clinicians may have different perspectives on successful treatment of suicide risk. That is, patients may see aspects of successful treatment differently than their clinicians do (Tracey, Wampold, Lichtenberg & Goodyear, 2014). Given that the "Collaborative Assessment and Management of Suicidality" (CAMS) emphasizes a therapeutic experience in which the clinician and the patient work together toward treatment outcomes, it is important to incorporate and emphasize the patient's perspective which can be leveraged by clinicians to improve the therapeutic alliance and increase rates of successful treatment (Jobes, 2006). To this end, this paper will focus on patient-generated responses to two outcome questions derived from CAMS: Q1 (Were there any aspects of your treatment that were particularly helpful to you?") and Q2 ("What have you learned from your clinical care that could help you if you became suicidal in the future?"). Finally, it will examine will clinically relevant differences of perceptions on these questions between military and civilian samples.

Note: This project was presented as a poster at the 2016 American Association of Suicidology Conference in Chicago.

Suicidal "Driver" Oriented Theory and Treatment within CAMS

Masters Student: Mariam J. Gregorian, M.A.

Research Advisor: David A. Jobes, Ph.D.

Abstract

Although the vast majority of prior research on suicidal behavior has focused on broad generalized factors known as risk factors and warning signs, however recent thinking suggests that these variables carry less predictive power and clinical utility than was originally thought (Tucker et al., 2015). An emerging area of research has begun to focus on suicidal "drivers," or patient-specific thoughts, feelings, and behaviors associated with acute suicidal risk. Driver-oriented theory has been most closely associated with the "Collaborative Assessment and Management of Suicidality" (CAMS), an evidence-based therapeutic framework that treats suicidality directly by involving the patient within their own care (Jobes, 2006; 2012). In the context of CAMS,

driver-oriented theory posits that suicidal drivers are best understood at the individual level, and must be revealed by the patient over the course of care. Once drivers are identified, they can be specifically targeted for treatment. The CAMS framework utilizes two tools to help facilitate the assessment and treatment of drivers: The Suicide Status Form (SSF) and the CAMS Therapeutic Worksheet (CTW). The current study will analyze a subset of qualitative data derived from a sample of suicidal active duty military personnel (N=64) to discuss optimal and non-optimal use of these tools. To illustrate, two case examples will be examined in-depth to analyze driver-relevant material from the SSF and the CTW. Based on the results of these analyses, recommendations for future driver-oriented research, training, and treatment will be discussed.

Note: Results from this project were presented at the 2016 American Association of Suicidology conference in Chicago, IL.

Clinical Utility and an Operational Definition of Suicide Drivers:

Enhancing the Assessment of Imminent Suicide Risk

Masters Student: Asher Siegelman

Research Advisor: David A. Jobes, Ph.D.

Abstract

Suicide is a problem that is increasing both globally and locally effecting even active-duty Military. Suicide prevention research has historically focused on risk factors, but some investigators more recently have begun to shift their focus to warning signs and “drivers” in order to enhance clinical utility. While risk factors have offered little clinical utility in the identification of individuals at imminent risk, warning signs have offered more promise although still limited. More recent researchers have proposed a shift to investigating “drivers” of suicide, in the interest of enhancing the assessment of imminent risk. Suicide “drivers” serve as a therapeutic construct for treatment planning in the Suicide Status Form (SSF); the assessment that informs intervention with the Collaborative Assessment and Management of Suicidality (CAMS). Researchers explained the concept of “drivers” as the core of a patient’s suicidality and therefore perhaps the best indicator of imminent risk. Thusly, in two consecutive studies I sought to explore the clinical utility of drivers from SSF data of active-duty suicidal Soldiers and to offer an operational definition of drivers that can inform future research of imminent risk.

Note: Results from this project were presented at the 2016 American Association of Suicidology conference in Chicago, IL.

Combat Exposure and Military Suicide:

Review of the Literature and Analysis of Risk

Among Active-Duty Suicidal Soldiers

Masters Student: Lisa C. Petersen, M.A.

Research Advisor: David A. Jobes, Ph.D.

Abstract

Not long after the invasion of Iraq in 2003, mental health providers, researchers, and military leaders became concerned about increasing military suicide rates. The media coverage of this issue suggested that combat exposure caused the increased suicide rates, but the empirical evidence yields an unclear picture of the role that combat exposure plays in suicide risk. Combat exposure has been conceptualized in a variety of ways, ranging from deployment history to specific combat experiences, with the latter being a stronger predictor of suicide risk per the literature. This study investigated the role of combat exposure in predicting suicide risk in a sample of active-duty, infantry Soldiers (N=74) who received CAMS treatment for suicide. Qualitative data from the Suicide Status Form (SSF) was coded for references to combat experiences, military life, and other reasons. Deployment history did not predict suicide risk, and only 3 soldiers in this sample specifically referenced combat experiences as directly related to their suicidal risk. These findings add to the body of literature that suggest the relationship between combat exposure and suicide is moderated and/or mediated by other factors, such as psychopathology, guilt, acquired capability, and perceived burdensomeness.

Note: A preliminary version of this project was presented as a poster at the American Association of Suicidology Conference in 2016 in Chicago, IL.

The Potential Impact of Medications on the Treatment of Suicidal Soldiers

Masters Student: Paul El-Meouchy, M.A.

Research Advisor: David A. Jobes, Ph.D.

Abstract

Those with existing psychiatric disorders are at higher risk for suicidal thoughts and suicide attempts. In a military population, medications such as anti-depressants are used to treat depression, benzodiazepines are used to treat anxiety, prazosin is used to treat nightmares commonly associated with PTSD, antipsychotics are used in the treatment of hallucinations, opiates are used in the treatment of pain, and stimulants are used to treat deficits in attention. Using multiple ANOVAs, 148 suicidal Soldiers

prescribed a given medication class were compared to Soldiers who were not prescribed medications in relation to suicide ideation, number of suicide attempts, symptoms of PTSD, overall mental health distress, and neural-behavioral symptoms. Regression analyses were used to determine whether the number of types of medications a participant was prescribed correlated to any of the outcome variables. Prescribed medications did not correlate to suicide ideation scores nor suicide attempts. Antidepressant medications positively correlated to PTSD symptoms, symptoms of stress and neurobehavioral symptoms. Antipsychotics positively correlated to PTSD symptoms. Benzodiazepines positively correlated to PTSD symptoms and neurobehavioral symptoms. Prazosin positively correlated to PTSD symptoms. Those prescribed a medication had higher scores in their respective outcome measures than those who are not prescribed. Stimulants and opioids did not correlate to any of the outcome measures. Furthermore, the number drugs did positively correlate with PTSD symptoms. Further research is needed to examine how the introduction of certain medications during treatment impact suicidality, as well as studies on polypharmacy treatment of suicidal patients.

Note: A presentation of this project was presented at the 2017 American Association of Suicidology conference in Phoenix, AZ.

AAS 2015 Annual Conference

The following are abstracts for presentations from the 2015 American Association of Suicidology (AAS) Conference in Atlanta, GA. This conference took place in April 2015.

1. Presentation Title: *Feeling trapped inside and outside: Entrapment levels and suicide risk in military, incarcerated, and college student populations*

Authors: Josephine Au, BS and David A. Jobes, PhD

Abstract: People experience a sense of entrapment when they want to change or flee from a situation but lack the capacity to do so (Taylor, Gooding, Wood, & Tarrier, 2011). Additionally, Shneidman (1996) and Baumeister (1990) conceptualize the desire to escape as being a major impetus of suicide. This is a natural experimental study that draws data from three settings that vary inherently in escape potential, which is a modulating factor to one's perceived level of entrapment (Williams, 1997). Based on the suggestion of Gilbert and Allan (1998), we divide entrapment into two subcategories: external entrapment (i.e., by external circumstances) and internal entrapment (i.e., by inner thoughts and feelings). Level of external entrapment is determined by the escape potential from an institution, with prison representing the highest degree of inescapability, followed by the military, and then college. As for internal entrapment, qualitative data of suicidal patients from the three samples regarding various reasons for dying (RFD) as recorded on the Suicide Status Form (SSF; Jobes, Kahn-Greene, Greene, Goeke-Morey, 2009) will each be manually coded as related or not related to desire to escape. We hypothesize that people with higher levels of external entrapment will also experience higher levels of internal entrapment, and that these two levels of entrapment will together predict the subject's overall suicide risk indicated in the SSF.

Research Aims: To understand the role that entrapment plays in predicting suicide risk based on three populations that vary in degree of escape potential.

Methods**:** Qualitative data of RFD among suicidal patients in prison, in the military (N = 75), and in college (N = 180) will be drawn and manually coded into four categories based on a coding manual developed by Jobes (2006): escape from the past, the pain, the subject's responsibilities, and a general category. The data will be analyzed as a 3x2 factorial ANOVA, with the first independent variable being the institution and the second one being the presence of an escape-related RFD. A post-hoc analysis will also be conducted to clarify the specific reasons for escape.

Results: The results of this study will elucidate whether external entrapment and entrapment in internal states predicts risks for suicide.

Conclusions**:** The knowledge gained from this study will shed light on the differentiated risk for suicide among various populations and the underlying mechanisms for suicide.

What the work adds to our knowledge on the topic: Little is known regarding how entrapment relates to suicide risk. The present study examines how various populations may experience various levels of external and internal entrapment.

Learning Objective**:** After the presentation, the audience will be able to identify external and internal factors that contribute to one's feelings of entrapment, and describe how these perceptions are related to suicide risk.

How learning objective will be met**:** The presentation will describe how people in different institutions vary in levels of external and internal entrapment, and how these factors relate to suicide.

2. Presentation Title: *The Relationship Between Dimensions of Suicidality and "Drivers" in Treatment Planning*

Authors: Asher Siegelman, BA and David A. Jobes, PhD

Abstract: Military suicide has exceeded the rates of the general population (Kuehn, 2009). To address this issue, researchers are developing methods to identify, assess, and treat Soldiers at risk. One such method is the Collaborative Assessment and Management of Suicidality (CAMS) which employs a unique approach to helping a suicidal patient by using a collaborative assessment (Suicide Status Form (SSF)) with both qualitative and quantitative measures to understand their suicidality in its idiosyncratic aspects and to build a treatment plan that caters to his/her struggle. Within the SSF is a tool based on the "internal struggle hypothesis" that measures patient ratings of Wish to Live (WTL) vs. Wish to Die (WTD). Researchers have found that suicidality based on this concept of internal struggle can be used to create three distinct suicidal typologies—those attached to living, vs. being ambivalent, vs. being attached to dying (O'Connor et al., 2012). More recently, researchers found that these dimensions are significantly related to treatment course, outcome and unique patterns of symptom severity – WTL clients, less severe; WTD clients, more severe (Lento et al., 2013). Finally, central to CAMS care is treatment planning that centers on two patient-defined problems conceptualized as "suicidal drivers" that must be targeted and treated for successful clinical suicide prevention.

Research Aims: Considering that WTL, AMB, WTD, index ratings have been shown to uniquely relate to treatment course/outcome they may be potentially relevant to suicidal "drivers" that are the focus of CAMS-oriented treatment.

Methods: 1) Organize the three types of suicidal risk as a quasi-independent variable from an archival data set (n=75) of suicidal soldiers from a South East military base. 2) Examine their potential differential relationship to respective suicidal problems/drivers that appear on CAMS treatment plans using a cross-sectional approach. 3) Code and analyze Soldiers' suicidal treatment plans/drivers using the Modified Consensual Validation (Jobes, 2004) to organize reliable themes of treatment problems/drivers.

Results: Analyses will be conducted to determine the relationship between the three suicidal types and reliably coded suicidal drivers obtained from CAMS treatment plans.

Conclusions: Discuss findings in relation to clinical utility and future research.

What the work adds to our knowledge on the topic: Describing the relationship between suicidal typologies and drivers of suicide will help inform clinicians of what treatment course to choose and what possible symptomology to expect.

Learning Objective: Describe how soldiers' self-report ratings of their internal struggle with suicide relates to their drivers for suicide.

How learning objective will be met: 1) Discuss research on suicide typologies in relation to treatment planning, course, and outcome. 2) Describe conceptualization and coding of drivers and their role in treatment planning. 3) Present correlational analyses between suicide typologies and drivers. 4) Discuss results in conjunction with their relevance to treatment planning, course, and outcome.

3. Presentation Title: *The Psychometric Properties of the CAMS Rating Scale: A Preliminary Evaluation*

Authors: Christopher D. Corona, M.A., & David A. Jobes, Ph.D.

Research Aims: The goals of this presentation are to discuss procedures for analyzing the psychometric properties of a clinical measure, review current findings specific to the CRS, and address the utility of these data with regard to treatment development and dissemination.

Method: Participants included suicidal Soldiers randomized to receive either CAMS or Enhanced Treatment as Usual (E-TAU) in an outpatient mental health clinic. The "CAMS Rating Scale" (CRS) is an instrument used to rate clinicians on their delivery of key components of CAMS, including Collaboration, Suicide-Focus, Risk Assessment, Treatment Planning, and Intervention. In the present study, a team of trained coders with expert knowledge of the CAMS clinical framework watched and rated videotaped

sessions from providers in each treatment condition. A preliminary psychometric evaluation of the CRS was then conducted, which included examinations of reliability, validity (i.e., criterion and construct), as well as a principle components analysis.

Results: Interclass correlation coefficients ranged from .95 to .99 for different domains of the CRS (i.e., Collaboration, Suicide Focus, Risk Assessment, Treatment Planning, Intervention, and Overall Adherence), suggesting that the CRS demonstrates high inter-rater reliability. Mann-Whitney U Tests comparing scores within each CRS domain between treatment groups were all significant, providing evidence for the strong discriminant (i.e., construct) validity of the CRS. Spearman's correlation coefficients comparing scores within each CRS domain between coders ranged from .84-.95, suggesting that scores provided by trained coders correlate highly with scores provided by the developer of the treatment framework (i.e., criterion validity). Lastly, a principle components analysis showed that CRS items cluster within domains that are consistent with key elements of the CAMS framework (i.e., establishing a specific therapeutic frame, suicide specificity, and client specificity).

Conclusions: The CRS demonstrates sound psychometric properties, and can be used to adequately assess the delivery of CAMS.

Learning Objective: At the conclusion of this presentation, the participant will be familiar with key psychometric constructs (i.e., reliability, validity, and principle components analysis), and will understand the evaluation of these constructs using a clinical measure within the context of a randomized controlled trial.

4. Presentation Title: *The Use of Clinical Risk Assessment Coding Systems with Suicidal Soldiers*

Authors: Katherine A. Brazaitis, MA and David A. Jobes, PhD

Abstract

Each year hundreds of thousands of Americans attempt to take their lives and some 38,000 die by suicide (Kung et al., 2008; McIntosh, 2009). Understanding the unique factors that contribute to an individual's suicidal ideation is essential for suicide-focused clinical assessment and treatment (Jobes, 2006). The "Suicide Status Form" (SSF; Jobes, 2006; Jobes et al., 1997)—used in the "Collaborative Assessment and Management of Suicide" approach (CAMS; Jobes, 2006)—is a valuable tool for collecting qualitative and quantitative data pertaining to different suicidal states. The psychometrics of the SSF are strong (Jobes et al., 1997; Conrad et al., 2009). Three different SSF-based coding systems (Jobes, 2012) have been developed for identifying suicidal typologies and include the SSF-based "Suicide Index Score" (SIS), "Suicide Motivation," and "Suicide Orientation." The following presentation will outline the study

design, methodology, and findings of a study applying these coding systems to the baseline data collected as part of a large randomized control trial of CAMS. The sample (n=75) consists of suicidal active duty US Army Soldiers who are being seen in a military treatment facility who have consented to participated in the RCT and have been randomized to receive CAMS. Baseline assessments include Lifetime Suicide Attempt Self-Injury Count; Scale for Suicide Ideation-Current; Outcome Questionnaire-45; Connor-Davidson Resilience Scale; and Structured Clinical Interview for DSM Disorders I and II. SSFs completed during the first session of CAMS will be coded for SSF based SIS, Suicide Motivation, and Suicide Orientation. The following hypothesizes will be applied: **H1:** Participants quantitatively categorized by the SSF-based SIS coding system as "Wish To Live," "Ambivalent," and "Wish to Die" will demonstrate significant between-group differences on measures of lifetime suicide attempts, current suicidal ideation, psychological distress, hope, and psychological resiliency. **H2:** Participants' qualitatively-generated data that is categorized by the Suicide Motivation coding system as "Life-Motivated," "Ambivalently-Motivated," and "Death-Motivated" will demonstrate significant between-group differences on the measures identified in H1. **H3:** Participants qualitatively-generated data that is categorized by the Suicide Orientation coding system as "Self-Oriented" or "Relationally-Oriented" will demonstrate significant between-group differences on the measures identified in H1. **Post-Hoc:** Post-hoc exploratory analyses will identify the potential relationship between the three SSF-based coding systems and major psychiatric disorders coded using the SCID-I and SCID-II. This study represents the first simultaneous application of three SSF coding systems to a relatively large sample of suicidal Soldiers. The findings of this study are critical to on-going development and understanding of suicide risk typologies with clear implications for clinical risk assessment and treatment which may help to clinically prevent suicidal patient deaths.

5. Presentation Title: *Characterizing Pre-Enlistment Risk Factors in Help-Seeking Suicidal Soldiers*

Authors: Gretchen R. Ruhe, BS, Kate Comtois, PhD, MPH, Amanda H. Kerbrat, MSW, LICSW, Anthony D. Greenman, BA, and David A. Jobes, PhD

Abstract

Data from this RCT was included in a conference presentation that pooled data from multiple DoD and VA studies to examine predictors of suicidal behavior using baseline (pre-randomization) data from six studies.

The four citations and abstracts arising from these data were published in a special issue of Military Behavioral Health and are listed below:

Article 1

Comtois, K A., Chalker, S. A., & Kerbrat, A. H. (2015). Pre- versus Post-enlistment Timing of First Suicide Attempt as a Predictor of Suicide Risk Factors in an Active Duty Military Population With Suicidal Thoughts. *Military Behavioral Health, 0*, 1–12. http://dx.doi.org/10.1080/21635781.2015.1133344

ABSTRACT Objective: This study examines the association of pre- versus post-enlistment timing of first suicide attempt with suicidal ideation, depressive symptoms, single vs. multiple attempts, and highest suicide attempt lethality in an active duty military sample with suicidal thoughts. Method: Data were pooled from baseline assessments of 784 help-seeking Service Members. Results: Adjusting for demographic and military covariates, suicidal ideation was higher for those with a history of suicide attempt. A pre-enlistment suicide attempt was associated with over four times the risk of multiple lifetime attempts. Conclusions: Pre-enlistment suicide attempts are important to assess as they increased risk of multiple attempts.

Article 2

Villatte, J. L, O'Connor, S. S., Leitner, R., Kerbrat, A. H., Johnson, J. L., & Gutierrez, P. M. (2015). Suicide Attempt Characteristics Among Veterans and Active-Duty Service Members Receiving Mental Health Services: A Pooled Data Analysis, *Military Behavioral Health, 3*, 316-327, DOI: 10.1080/21635781.2015.1093981 To link to this article: http://dx.doi.org/10.1080/21635781.2015.1093981

Abstract. Past suicidal behaviors are among the strongest and most consistent predictors of eventual suicide and may be particularly salient in military suicide. The current study compared characteristics of suicide attempts in veterans (*N*=746) and active-duty service members (*N*=1,013) receiving treatment for acute suicide risk. Baseline data from six randomized controlled trials were pooled and analyzed using robust regression. Service members had greater odds of having attempted suicide relative to veterans, though there were no differences in number of attempts made. Service members also had higher rates of pre-military suicide attempts and non-suicidal self-injury (NSSI). Veterans disproportionately attempted suicide by means of overdose. In veterans, combat deployment was associated with lower odds of lifetime suicide attempt, while history of NSSI was associated with greater attempt odds. Neither was significantly associated with lifetime suicide attempt in service members. Implications for suicide assessment and treatment are discussed

Article 3

Zimmerman, L., Villatte, J. L., Kerbrat, A. H., Atkins, D. C., Flaster, A., & Comtois, K. A., (2015). Current suicidal ideation among treatment-engaged active-duty soldiers and marines, *Military Behavioral Health, 3***:** 296-305**.** DOI: 10.1080/21635781.2015.1093980

Abstract. We examined suicidal ideation among 399 active-duty Soldiers and Marines engaged in mental health treatment. Using a generalized linear model (GLM) controlling for demographic and military factors, depression, and positive traumatic brain injury (TBI) screen, we confirmed our hypothesis that self-report measures of current post-traumatic stress disorder (PTSD) symptoms uniquely predicted suicidal ideation. The association between PTSD severity and suicidal ideation was moderated by gender, with women at higher risk as PTSD severity increased. Female Soldiers and Marines with high levels of PTSD should receive additional monitoring and intervention. Self-report measures may aid with risk assessment and identify symptom-related distress associated with suicide risk.

Article 4

Bryan, C. J., & Rudd, M. D. (2015). Demographic and diagnostic differences among suicide ideators, single attempters, and multiple attempters among military personnel and veterans receiving outpatient mental health care, *Military Behavioral Health, 3,* 289-295. DOI: 10.1080/21635781.2015.1093978

Abstract. Patients receiving outpatient psychiatric treatment who have made two or more lifetime suicide attempts (i.e., multiple attempters) report higher levels of psychopathology and are at increased risk for making additional suicide attempts relative to patients who have never attempted suicide (i.e., ideators) or made only one suicide attempt (i.e., single attempters). The present study examined these relationships among 590 Iraq and Afghanistan era military personnel and veterans using baseline data pooled from three randomized clinical trials. Diagnoses were established using the Structured Clinical Interview for DSM-IV (SCID) or Mini International Neuropsychiatric Interview (MINI); and history of suicide attempt was established using the Suicide Attempt Self-Injury Interview (SASII). Borderline personality disorder, but no other psychiatric diagnosis, was significantly more common among multiple attempters as compared to ideators and single attempters. Major depressive disorder was significantly more common among single and multiple attempters than ideators, but there was no difference between single and multiple attempters. Results suggest that borderline personality disorder is most strongly associated with repeated suicide attempts among military personnel and veterans in outpatient psychiatric settings.

AAS 2016 Annual Conference

The following are abstracts for presentations from the 2016 American Association of Suicidology (AAS) Conference in Chicago, IL.

1. Presentation title: Title: An Unknown War: The Difference in Suicidal Ideation between Active-Duty Personnel and Veterans.

Authors: Nicole M. Caulfield, B.A., Madison Bell, B.A., Allison Bond, B.A., Catherine Broshek, B.A., Tara Casey, B.A., Paul El-Meouchy, M.A., Cynthia Fioriti, B.A., Lisa Peterson, M.A., Lindsey Rekstis, B.A., Mary Wiles, B.A., David Jobes, Ph.D.

Abstract

Research Aims: Suicide is the second leading cause of death in the United States military population (Bryan et al., 2012). Research shows an increase in suicidal attempts since 2005 during the Iraq and Afghanistan War. These data defy the historic tendency for suicidal rates to *decrease* during times of war (Bryan et al., 2013) and led me to question the possible difference between Active-Duty and Veteran cohorts in regards to their suicidal risk. I developed three main questions based off prior research on reliable typologies of suicidal risk and behaviors. These were: Will Active-Duty military personnel be more relationally-oriented than Veterans? Will the Active-Duty cohort be more focused on vocation and escape in their qualitative responses than the Veteran cohort? And finally, will the Active-Duty cohort will have a higher overall suicide risk rating than the Veteran cohort.
Method: Archival data was obtained from two cohorts of suicidal patients, which included a sample of suicidal Active-Duty U.S. Army Infantry Soldiers (n = 89) and a sample of suicidal Veteran (n = 62). This study thus cross-sectionally examined both the quantitative and qualitative SSF-based responses between these cohorts. In this study we used the first page of “Suicide Status Form” (SSF), which is the core multipurpose clinical tool that is used in the “Collaborative Assessment and Management of Suicidality” (CAMS; Jobes, 2016). This included both qualitative and quantitative assessments. Statistics involved using Independent t-tests, chi-squares, and “macro-coding” and “micro-coding” methodologies.
Results: Results showed distinctly different psychological profiles between cohorts related to their suicidality. Active-Duty Soldiers were more interpsychic and escape-oriented regarding suicide while Veterans were more intrapsychic regarding suicide. However, Active-Duty personnel and Veterans were not significantly different regarding their overall suicidal risk.
Conclusions: These results could suggest possible instrumental implications. The younger Active-Duty cohort might benefit more from group therapy or psychotherapy focused on vocational issues and the idea of escape. In contrast, the older VA cohort might benefit from insight therapy and psychotherapy. Further research should analyze how age and other demographic factors may be an effect (e.g. race, lifetime psychiatric history). An important question to consider in the future is if these Active-Duty personnel could possibly become more like these Veterans in the future.

Learning Objectives: This was an exploratory study of the difference in suicidal typologies in Active-Duty personnel and Veterans. The main objective was to assess the differences in suicidal thoughts and behaviors of these two groups using the first page of the SSF. Other objectives included to discuss the lack of research in comparing these two populations, to evaluate these findings for implications for assessment and therapy in these military populations, and help formulate ideas for further research regarding suicidal differences in these two populations.

2. Presentation title: Operationalizing "Drivers" of Suicide for Research and Clinical Utility

Authors: Asher Siegelman and David Jobes, Ph.D.

Abstract

Over the last decade, suicide prevention research has evolved from investigating suicide risk factors to a more recent focus on warning signs for a more exacting assessment of imminent risk (Rudd et al., 2006). Risk factors have long been recognized as psychosocial correlates of suicidal behaviors over the long-term (Rudd et al., 2006). A well-known example is hopelessness which relates to suicidal behavior in a time span of 1 to 20 years (Beck et al., 2000). Although risk factors are important to assess for determining the general presentation of a patient's issues, this long-term aspect offers little value to clinicians who are seeking to determine imminent risk in a patient. Warning signs have offered more promising clinical utility in that anger/aggression distinguished suicidal ideators who had made an attempt from ideators who had not made an attempt (Gunn, Lester, & McSwain, 2011). There is a growing consensus among researchers that no single risk factor or warning sign, but rather a combination or "constellation" of variables should be considered (Joiner et al., 1999; Rudd et al., 2006; Tucker, Crowley, Davidson, & Gutierrez, 2015). Joiner and colleagues (1999) highlighted a need for focusing on "severe risk" factors (e.g. attempt history) together with current suicidal symptoms to determine more imminent risk. In line with this discussion, the "Collaborative Assessment and Management of Suicidality" (CAMS; Jobes, 2006) approach offers clinicians a framework for determining issues that function as "causal risk factors" (Franklin, 2015) for imminent risk. In CAMS, these issues are called "drivers" which function as the core phenomenology of the suicidal struggle wherein the patient's perception/interpretation is the key. Patient-defined suicidal drivers are thus central to CAMS-guided treatment. However, what has proved challenging is operationally defining drivers to aid researchers and clinicians who seek to understand and treat suicidal risk. The proposed definition is, "suicide-specific thoughts, feelings, and behaviors which lead to suicidality for the patient" (Jobes et al., 2011). This definition does distinguish drivers from risk factors (which are static

constructs) and it highlights their dynamic nature described by researchers as client-specific warning signs (Tucker et al., 2015). However, this preliminary definition does not describe additional key elements that need to be expressed for a fully operational definition. Suicidal drivers are by definition subjective because they are based on the patient's perceptions of what makes suicidal behavior so compelling. For a clinician to reinterpret the driver according to a cognitive theoretical orientation when the client expressed it as behavioral removes the client's perception. Drivers are subjective, as they are based on the client's perception and flexible in that they cannot be restricted to one theory. In this way they serve as the etiological source of a client's suicidality, so it is critical to help researchers and clinicians understand what makes them distinct, so that they can be studied and applied.

Research Aims

1) To explore a possible operational definition of drivers based on client specific warning signs.

2) To explore an effective strategy for helping a client reveal his/her drivers and the best time in the CAMS protocol to implement this strategy.

Methods

We will use an archival data set (n = 73) of suicidal Soldiers from the Operation Worth Living (OWL) study in a South Eastern US military installation. These data will serve as case studies to illustrate the differences between warning signs and drivers and to show the clinical process of revealing the drivers both successfully and unsuccessfully.

Results

Qualitative data from this data set were previously analyzed (Siegelman & Jobes, 2014) and found to reveal the apparent difficulty clinicians had with identifying drivers and distinguishing them from warning signs and even risk factors.

Conclusions

This paper will serve to distinguish drivers from warning signs and to assist clinicians in the implementation of strategies for revealing drivers.

What the work adds to knowledge on the topic

This will further the research that has been done on imminent risk of suicide by continuing the work of Tucker, Crowley, Davidson, and Gutierrez (2015). Drivers will be thoroughly explained and distinguished from warning signs as the common tendency is to see them as existing on the same continuum when in fact they are orthogonal.

One learning objective

Clinicians and researchers will learn how to identify suicidal drivers.

How the learning objective will be met

Case studies will be presented as visual representations to illustrate the unique qualities of suicidal drivers.

2016 Military Health Systems Research Symposium (Orlando, FL)

Presentation title: Operation Worth Living: A Randomized Controlled Trial of the Collaborative Assessment and Management of Suicidality (CAMS) vs. Enhanced Care as Usual with Suicidal Soldiers

Authors: David A. Jobes, Ph.D., Katherine Comtois, Ph.D., Peter Gutierrez, Ph.D., Lisa Brenner Ph.D., Bruce Crow, Psy.D., and Brad Singer, LCSW

Abstract

Objective: This study describes a randomized controlled trial called “Operation Worth Living” (OWL) which compared the use of the Collaborative Assessment and Management of Suicidality (CAMS) to enhanced care as usual (E-CAU). We hypothesized that CAMS would be more effective than E-CAU for reducing suicidal ideation (SI) and suicide attempts (SA), along with secondary behavioral health and health care utilization markers for U.S. Army Soldier outpatients with significant SI (i.e., >13 on Beck’s Scale for Suicide Ideation). Method: Study participants were 148 Soldiers who presented to a military outpatient behavioral health clinic. There were 73 Soldiers in the experimental arm of the trial who received adherent CAMS; 75 Soldiers received E-CAU. Nine a-priori treatment outcomes (SI, past year SA, suicide-related emergency department (ED) admits, behavioral health-related ED admits, suicide-related inpatient psychiatric unit (IPU) days, behavioral health-related IPU days, mental health, psychiatric distress, resiliency) were measured through assessments at Baseline and at 1, 3, 6, and 12 months post-Baseline (with a 78% retention of intent-to-treat participants at 12 months). Results: Soldiers in both arms of the trial responded to study treatments in terms of all primary and secondary outcomes (effect sizes ranged from 0.63 to 12.04). CAMS participants were significantly less likely to have any suicidal thoughts by 3 months in comparison to those in E-CAU (Cohen’s d = 0.93, p=.028). Conclusions: Soldiers receiving CAMS and E-CAU significantly improved post-treatment. Those who received CAMS were less likely to report SI at 3 months; further group differences were not otherwise seen.

2016 European Symposium for Suicide and Suicidal Behaviors

(Oviedo, Spain)

Presentation title: The Effectiveness of the Collaborative Assessment and Management of Suicidality (CAMS) Based on Clinical Trial Research

Author: David A. Jobes, Ph.D.

Abstract

CAMS is an evidence based therapeutic framework that provides suicide-specific clinical care for suicidal patients (Jobes, 2006; 2016). Based on 25 years of clinical research, CAMS is guided by the use of the "Suicide Status Form" which is a multipurpose assessment, stabilization, treatment planning, tracking, and clinical outcome tool. All CAMS assessments are done collaboratively and with empathically; patient defined "suicidal drivers" are identified, targeted, and treated over the duration of CAMS guided care. CAMS has a robust evidence base with seven published correlational clinical trials across a range of settings and suicidal patients (Jobes, 2012). Two randomized controlled trials have also been published (Andreasson et al., 2016; Comtois et al., 2011). Three additional randomized controlled trials are underway in the United State and abroad. This presentation will present new data from the most recent randomized controlled trials to provide the recent results about the effectiveness and utility of CAMS with suicidal US Army Soldiers and suicidal college students. The various findings across all studies to date will be integrated to better understand the effectiveness of CAMS in different settings with different types of suicidal patients. Next steps in this line of research will also be reviewed.

AAS 2017 Annual Conference

The following are abstracts for presentations from the 2017 American Association of Suicidology (AAS) Conference in Phoenix, AZ. This conference took place in April 2017.

1. Presentation title: A Comparison of Suicidal "Drivers" Among Military and Civilian Samples

Authors: Mariam J. Gregorian, Madison Bell, Asher E. Siegelman, & David A. Jobes, PhD

Abstract

Although the majority of research investigating suicidal behavior has largely focused on generalized risk factors and warning signs, an emerging area of research in the treatment of suicidal patients is on that of "drivers", which are defined as patient specific thoughts, feelings, and behaviors associated with suicidal ideation (Tucker, Crowley, Davidson, & Gutierrez, 2015). The "Collaborative Assessment and Management of Suicidality" (CAMS) provides a therapeutic framework for the assessment and treatment of suicide drivers primarily through use of the Suicide Status Form (SSF), in which the patient is asked to identify the two problems that most directly lead him or her to consider suicide (Jobes, 2016). Ultimately, the goal of uncovering such drivers is to help the patient understand their own suicidality, and to better inform effective treatment planning tailored towards specific drivers. The current study will analyze drivers from 25 suicidal patients, collected as part of a randomized controlled trial evaluating the efficacy of CAMS among a sample of recent suicide attempting individuals seeking treatment in a community mental health setting. Qualitative data collected from the SSF will be analyzed and coded into distinct driver categories, which will then be compared to previously coded drivers from a military sample (Siegelman, Gregorian, Ponce, & Jobes, 2015). We hypothesize that drivers from the civilian sample will differ from the military sample in some categories (e.g. military and physical problems), while retaining similarities in others (e.g. interpersonal and self-regard). Implications for driver-oriented treatment will be discussed.

Research Aims: This presentation aims to inform the audience of the topic in three ways:

1. Describe driver-oriented assessment and treatment within CAMS, with emphasis on the clinical utility of drivers for treatment planning.

2. Present a qualitative analysis of drivers coded from a sample of recent suicide attempting individuals, alongside a previously analyzed sample of drivers from a military sample.

3. Discuss implications for the utilization of drivers in developing a broader understanding of other dimensions of suicidality.

Methods: We will conduct a qualitative analysis by developing a reliable coding system of patient reported drivers from the SSF, completed during the initial session of CAMS. Prospective driver categories may include: Self-regard, interpersonal, family, emotion regulation, and hopelessness. We will then do a cross-sectional comparison of drivers from the civilian sample (N=25) to a previously analyzed military sample (N=75).

Results: The results of this study will elucidate the differences between civilian and military drivers, and explore the extent to which drivers may relate to broader aspects of suicidal typologies.

Conclusions: The final aim of the presentation is to provide a thorough understanding on the assessment and treatment of drivers, as well as an understanding of how they may differ between various at-risk populations.

What does this work add to our knowledge on the topic: There is currently scant research on the use of driver-oriented treatment for suicidal behavior. This presentation will be the first empirical investigation of drivers from a community mental health sample.

Learning Objective 1: At the end of this presentation, the audience will understand the clinical utility of driver-oriented treatment within civilian and military populations.

How learning Objective 1 will be met: The presentation will describe key similarities and differences between civilian and military drivers, and discuss treatment implications for both of these at-risk populations.

2. Presentation title: TITLE: Resilience and Suicidality in Soldiers

AUTHORS: Sean C. Houchins, M.A. and David A. Jobes, Ph.D.

Abstract

Over the past decade, suicide incidence in the United States military has increased substantially (Ramchand, Acosta, Burns, Jaycox, & Pernin, 2011). Identifying effective

suicide prevention efforts requires understanding not only what factors make an individual more susceptible to suicide, but also what factors appear to be protective. While the relationship between resilience and suicidality is not well understood, available evidence suggests that the presence or absence of resilience may play a significant role in preventing suicide (Pietrzak, Russo, Ling, & Southwick, 2011). Accordingly, the present study will examine this relationship and how it may affect the presentation of suicidal soldiers prior to engaging in treatment. The data for this study is from a large scale randomized controlled trial (N = 148) comparing the Collaborative Assessment and Management of Suicidality (CAMS; Jobes, 2016) to an enhanced care as usual condition in treating suicidal soldiers at the Fort Stewart military post in Georgia. Resilience was measured using the Connor-Davidson Resilience Scale (Connor & Davidson, 2003), a 25-item measure assessing 5 distinct resilience factors. Reasons for living and suicidality were assessed using the Suicide Status Form (SSF-IV). This poster will present analyses examining the relationship between resilience, reasons for living, and suicidality as suicidal Soldiers entered treatment. The results of this study may provide evidence to suggest that resilience is an important construct to consider in understanding an individual's profile and potential for suicidal risk. This specific understanding will allow clinicians to better identify suicidal risk within a strengths-based framework. Additionally, significant results would suggest that the facilitation of resilience-building may be a worthwhile endeavor in future suicide prevention efforts in the military.

What the Work Adds to Our Knowledge of the Topic

While there is preliminary evidence to suggest that greater resilience may be associated with decreased suicidality, further research is needed to better understand this relationship and how it may moderate the specific presentation of suicidal soldiers. Accordingly, the present study will clarify this relationship and explore the importance of resiliency as a protective factor.

Learning Objective 1

Understand how resiliency is related to suicidality in Soldiers prior to treatment

How Learning Objective 1 Will Be Met

The learning objective will be met through the presentation of relevant background literature and discussion of how it specifically relates to the results from the present study.

3. Presentation title: Title: Outcomes for Suicidal Soldiers Receiving Behavioral Health Treatment: Command-Directed vs. Self-Referred

Authors: Melvin Walker, Jr., BS, Samantha A. Chalker, BA & David A. Jobes, PhD

Abstract

To develop an understanding of the potential impact of being command referred vs. self-referred on a suicide-specific treatment pertaining to the following outcome variables: suicidal ideation, overall symptom distress, PTSD, resiliency, retention to military service, . and the follow-up interventions they received by command (e.g. unit watch).Participants were 148 suicidal U.S. Army Soldiers who were part of a larger randomized controlled clinical trial. We created a quasi-independent variable that categorized these Soldiers into two groups: (a) those who were command-directed for care, and (b) those who were self-referred to care. We will investigate potential differences in treatment outcome pertaining to the following specific measures: the Scale for Suicide Ideation, the Outcome Questionnaire-45 (overall distress), the PTSD Checklist, the Connor-Davidson Resilience Scale, and data pertaining to follow-up interventions based on . In general we hypothesize that Soldiers who self-referred will have lower ideation scores, lower symptom distress, lower PTSD scores, and higher resiliency.

Learning objective: To develop an understanding of the potential impact of being command referred vs. self-referred on a wide range of clinical treatments outcomes.

How learning objective will be met: The presentation will explore the outcomes of the stated psychological measures for both groups to determine whether self-referred Soldiers are less symptomatic and thereby more likely to remain in the military.

Research Aims: This presentation aims to inform the audience of the topic in these ways:

1. Present an overview of the differences between command-directed and self-referred Soldiers pertaining to suicidal ideation and symptom distress.

2. Understand the differences in command-directed and self-referred Soldiers in the follow-up care they receive by command (e.g. unit watch) and retention to military service.

Methods: Participants were 148 suicidal U.S. Army Soldiers who were part of a larger randomized controlled clinical trial. Study Soldiers will be categorized into two groups:

(a) those who were command-directed (b) those who were self-referred. We will investigate any potential differences in treatment outcome between these groups in terms of:

1. current suicidal ideation score (using the Scale for Suicide Ideation)

2. symptom distress score (using the Outcome Questionnaire-45)

3. the presence of Axis I disorders (Borderline Personality Disorder)

4. command interaction with Soldiers (e.g. unit watch)

5. discharge status disposition (medical discharge, time in military post index crisis)

Conclusions: We hypothesize that Soldiers who self-refer will have lower ideation scores, lower symptom distress, fewer psychological disorders, less command interaction (e.g., unit watch), and fewer discharges from the military (e.g., they remained in the military longer, are were not medically discharged).

What the work adds to the knowledge on the topic: Previous research highlights unit-specific procedures and safety measures to prevent and manage suicidal Soldiers. Additional studies outline the benefits of Soldiers voluntarily seeking behavioral health treatment compared to those who are command-directed. This is relevant because it emphasizes the differences between Soldiers who are intrinsically motivated (have inherent goals and ambitions) to seek help compared to Soldiers who are extrinsically motivated (i.e. mandated by chain of command) to seek treatment. It also touches on the stigma present within the military on seeking treatment and its perceived career-altering effects. There is scant research on the outcomes of Soldiers who are command-directed to seek behavioral health treatment compared to Soldiers who are self-referred.

4. Presentation title: The Psychology of Gender Differences in Suicidality based on Suicide Status Form Data

Authors: Victoria A. Colborn, B.S., Allison Bond, B.S., and David A. Jobes, Ph.D.

Abstract

Research Aims: Throughout the study of suicide, suicide attempts and deaths are markedly differentiated by gender. Women attempt suicide at a rate two to three times higher than men, whereas men are nearly four times more likely to die by suicide

compared to women (Weissman et al., 1999; Centers for Disease Control and Prevention [CDC], 2013, 2011). The exact psychological mechanisms behind these robust gender differences in suicidal behavior, however, are less clear. The aim of this study was to elucidate certain psychological mechanisms that may underlie gender-based differences in suicidality.

Method: This study was an exploratory, descriptive, cross-sectional examination of gender differences in suicidality from a combined dataset that has been collected for over 20 years, across 12 settings worldwide. The Suicide Status Form (SSF) (Conrad et al., 2009; Jobes et al., 1997) has been used across these clinical samples to measure the SSF quantitative constructs of psychological pain, stress, agitation, hopelessness, and self-hate, as well as self-reported overall risk of suicide, wish to live, and wish to die and self versus relational suicide orientation. Quantitative data from these SSF constructs was extracted from completed SSFs of 856 suicidal patients (female: n = 467; male n = 389) from the following countries: China (n = 12), Denmark (n = 56), Norway (n = 97), Switzerland (n = 120) and the United States (n = 571). Between-group comparisons were made using independent samples t-tests and chi square analyses.

Results: There was no significant difference between female and male participants with regard to agitation or hopelessness scores. There were also no significant differences with regard to other orientation to suicide. Compared to males, female participants reported significantly higher levels of psychological pain ($p = .033$), stress ($p = .031$), and self-hate ($p < .001$). Females also reported significantly higher scores for overall risk of suicide ($p = .001$) and were significantly more likely to attribute their suicidality to thoughts and feelings about themselves ($p = .007$). Compared to females, male participants were significantly more likely to have scores that indicated a wish to live ($p = .047$).

Conclusions: Suicidal patients who identify as female report higher levels of psychological pain, stress, self-hate, overall risk of suicide, and are more likely to attribute their suicidality to thoughts and feelings about themselves. It is possible that for females, psychological symptoms such as agitation and hopelessness play a less significant role in activating suicidality, whereas aspects associated with an internally/self-focused kind of suicidal suffering may play a more significant role. It is also possible that females overrate, or are more comfortable reporting aspects of their suicidality, whereas men underrate or are less candid with their responding. Clinicians are encouraged to explore the subjective meaning behind client's quantitative responses because different scores may have various meanings depending on the individual. Greater research focus is needed on deciphering attributes of interventions

that are most appealing, increase adherence, and reduce suicide for both women and men.

Learning Objectives: At the conclusion of this presentation, attendees will be able to summarize the differences in self-reported psychological pain, stress, agitation, hopelessness, self-hate, suicide risk, wish to live, wish to die, and self versus relational suicide orientation between men and women. Attendees will also be able to describe the implications of these gender differences in relation to the assessment and treatment of suicidality.

5. Presentation title: Perseveration Versus Rumination: Maladaptive Cognitive Processes and Suicide Risk

Authors: Arghavan Hamedi, M.A. & David Jobes, Ph.D.

Abstract

Sociological, biological, psychodynamic, developmental, behavioral, and cognitive approaches have all been used to understand suicidality within past 100 years (Jobes & Mann, 1999). From a cognitive perspective, one of the many proposed theories in explaining the development of suicide ideation is the Attention Mediated Hopelessness (AMH) theory, stating that individuals may be at higher suicidal risk if they have compulsive, focused attention on distress and negative life events (MacCoon, Abramson, Mezulis, Hankin, & Alloy, 2005). These prolonged and persistent self-regulatory cycles of thoughts are referred to as ruminations (Smith, Alloy, Abramson, & Lyn, 2006). While the relationship between suicide risk and ruminations have been studied, other related maladaptive cognitive processes have not. An example of this is perseveration, or the unintentional repetition of specific phrases or responses that occur without the presence of a stimulus (Sandson & Albert, 1984). Like ruminations, perseverations are also commonly regarded as being a dysfunctional coping mechanism (Giele et. al., 2013). While it may be tempting to cluster these two cognitions together, dichotomizing perseverations and ruminations can elucidate novel differences in clinically suicidal thoughts and behaviors. The current study aims to differentiate between these two maladaptive cognitive processes, and to further investigate the different treatment outcomes that may arise from both. The first hypothesis will align with the findings of previous literature by Morrison and O'Connor (2008), predicting that suicidal Soldiers who ruminated more frequently were more likely to attempt suicide as their treatment outcome. The second hypothesis will predict that suicidal Soldiers who perseverated more frequently were more likely to die by suicide as their treatment outcome.

Research Aims:

The goal of the study is to examine the distinction between ruminations and perseverations, and how these two constructs may vary in treatment outcome in a sample of clinically suicidal soldiers.

Methods:

Data were drawn from an archive of hand written patient responses who completed the first page of the “Suicide Status Form” that is used within the “Collaborative Assessment and Management of Suicidality” (Jobes, 2016). Participants were 73 US Army Soldiers who participated in randomized controlled trial--the “Operation Worth Living” Study—at Ft. Stuart, Georgia. Ruminations and perseverations will both be operationalized and manually coded as a frequency variable. The independent variable will be maladaptive cognitive tendencies, and will have 3 levels: ruminations, perseverations, and neither. The dependent variable will be treatment outcome, which will be categorical, and will have 4 levels: resolved, not resolved, attempt, and suicide. The data will be analyzed using a Logistic Regression.

Results:

First, the results of this study will elucidate how frequent the tendencies to ruminate and perseverate are. Secondly, the results will distinguish between ruminative versus perseverative thinking styles, and how these two cognitive processes may have significantly different treatment outcomes.

Conclusions:

Conclusions will provide clarity on how these two similar yet significantly different cognitive processes can be differentiated amongst clinically suicidal patients. Because this discrepancy has not been empirically studied in this specific population, results could shed light on helpful distinctions in current clinical treatment approaches and risk assessments.

What the work adds to our knowledge of the topic:

This study can not only distinguish between two similar yet distinctive maladaptive cognitive processes, but it can be one of the first to elucidate the possible prevalence and mechanisms behind perseveration in clinically suicidal patients. Furthermore, findings may pave way for discriminate approaches in clinically treating suicidal patients with perseverative thinking styles.

Learning Objective 1:

The readers will be able to differentiate between ruminations and perseverations, and describe how these different maladaptive cognitive tendencies are related to suicide risk in their own unique ways. Specifically, readers will be able to contradistinguish treatment outcomes with those who have ruminative thinking styles versus perseverative thinking styles.

How learning objective 1 will be met:

The paper will describe how clinically suicidal patients may vary in the frequency of rumination versus perseverations, and how these different frequencies may have varying outcomes in suicidal treatment.

6. Presentation title: Title: A Comparison of Suicidal “Drivers” Between College and Military Samples

Authors: Mariam J. Gregorian, David A. Jobes, PhD

Abstract

Although the majority of research investigating suicide has largely focused on suicide risk factors and more recently suicidal warning signs, an emerging area of research in the treatment of suicidal patients is on that of suicidal “drivers,” which are defined as patient-specific thoughts, feelings, and behaviors associated with suicidal ideation and behavior (Tucker, Crowley, Davidson, & Gutierrez 2015). The “Collaborative Assessment and Management of Suicidality” (CAMS) provides a therapeutic framework for the assessment and treatment of patient-defined suicide drivers primarily through use of the “Suicide Status Form” (SSF), in which the patient is asked to identify the two problems that most directly lead him or her to consider suicide (Jobes, 2016). Ultimately, the goal of uncovering such drivers is to inform driver-specific treatment. The current study will analyze identified drivers from 30 suicidal patients, collected as part of a randomized controlled trial evaluating the effectiveness CAMS among a sample of suicidal college students. Qualitative data collected from the SSF will be reliably organized into distinct driver content categories, which will then be compared to previously coded drivers from a military sample (Siegelman, Gregorian, Ponce, & Jobes, 2015). We hypothesize that drivers from the college sample will differ from the military sample in some categories (e.g. military and physical problems), while retaining similarities in others (e.g. interpersonal and self-regard). We further hypothesize that specific differences among driver categories will uniquely relate to general differences in

suicidal typology (Wish To Live, Ambivalent, Wish To Die; O'Connor et al., 2012). Implications for driver-oriented treatment will be discussed.

Research Aims: This presentation aims to inform the audience of the topic in three ways:

1. Describe driver-oriented assessment and treatment within CAMS, with emphasis on the clinical utility of drivers for treatment planning.
2. Present a qualitative analysis of drivers coded from a sample of suicidal college students, alongside a previously analyzed sample of drivers from a military sample.
3. Discuss implications for the utilization of drivers in developing a broader understanding of other dimensions of suicidality.

Methods: We will conduct a qualitative analysis by developing a reliable coding system of patient reported drivers from the SSF, completed during the initial session of CAMS. Prospective driver categories may include: Self-regard, interpersonal, family, school, and hopelessness. We will then use a Chi-Square Test of Independence to compare drivers from the college sample (n=30) to a previously analyzed military sample (*N*=75), with college drivers as the independent variable and military drivers as the dependent variable. Finally, we will use a Chi-Square Test of Independence of Suicide Index Score categories (SIS) among the college sample, with driver category as the independent variable and SIS typology (Wish To Live, Ambivalent, Wish To Die,) as the dependent variable.

Results: The results of this study will elucidate the differences between college and military drivers, and explore the extent to which drivers relate to broader aspects of suicidal typologies.

Conclusions: The final aim of the presentation is to provide a thorough understanding on the assessment and treatment of drivers, as well as an understanding of how they may differ between various at-risk populations.

What does this work add to our knowledge on the topic: There is currently scant research on the use of driver-oriented treatment for suicidal behavior. This presentation will be the first empirical investigation of drivers from a college counseling center sample.

Learning Objective 1: At the end of this presentation, the audience will understand the clinical utility of driver-oriented treatment within college and military populations.

How learning Objective 1 will be met: The presentation will describe key similarities and differences between college and military drivers, and discuss treatment implications for both of these at-risk populations.

7. Presentation title: Assessing the Reliability of the CAMS Rating Scale Using a Generalizability Study

Author: Chris Corona, M.A.

Abstract:

Suicide is a significant public health concern both domestically and abroad, and rates of suicide in the United States military in particular have risen over the past decade (Bryan, Jennings, Jobes, & Bradley, 2012; Drapeau & McIntosh, 2015; World Health Organization, 2014). Nonetheless, there have been relatively few randomized controlled trials evaluating the effectiveness of suicide treatments in both the general population and the military in particular (Leenaars, 2011). Of the studies that do exist, many have significant methodological flaws or have failed to show significant reductions in outcomes related to suicidal behavior (Ward-Ciesielski & Linehan, 2014; Comtois & Linehan, 2006). One important methodological consideration when evaluating clinical psychotherapeutic interventions is the role of treatment fidelity, or the extent to which treatments being compared are both distinct and delivered as intended. Without adequate assessment of treatment fidelity, the ability to draw valid conclusions about the effects of interventions on outcomes is significantly hindered (Kazdin, 2003). Direct observation has been posited as an accurate method of ensuring that providers in different treatment conditions are delivering distinctly different interventions, and that these interventions are being delivered as prescribed (Bellg et al., 2004; Lane et al., 2004; Smith et al., 2007). Moreover, one of the most extensively used methodologies for satisfying direct observation criteria is the creation of a measure that can be used to rate clinician performance with regard to specific components of a particular intervention. Thus, the goal of the current generalizability study is to evaluate the reliability of a treatment fidelity measure intended for use in examining a particular suicide-specific intervention.

Data for the current study were collected between September 2012 and March 2016 as part of a randomized controlled trial at a U.S. Army installation at Ft. Stewart in Georgia. Clinicians in the trial delivered either the “Collaborative Assessment and Management of Suicidality” (CAMS) or “Enhanced Care-As-Usual” (E-CAU) to suicidal Soldiers.

Study sessions were videotaped and viewed by study personnel, who rated the performance of each clinician using the “CAMS Rating Scale” (CRS). These ratings were then used to conduct a generalizability study to determine the contribution of variance from different components of the measurement model, and to assess the inter-rater reliability of the measure as well as its ability to reliably distinguish between interventions (i.e., CAMS and E-CAU).

Results of the generalizability study indicate that variance in the measurement model included in the current study stems primarily from expected sources (i.e., different treatment groups). More importantly, results also show that the CRS can reliably differentiate CAMS from another treatment (i.e., E-CAU), and that it demonstrates high inter-rater reliability. These properties establish the CRS as a reliable measure that can play an integral role in assessing treatment fidelity within randomized controlled trials evaluating CAMS.

What The Work Adds To Our Knowledge On The Topic: This is the first known presentation of data from a generalizability study examining a treatment fidelity measure for a suicide-specific clinical intervention. Results from this presentation can in turn be used to inform the development and evaluation of treatment fidelity measures for other suicide-specific clinical interventions, which are imperative to the study of these interventions within randomized controlled trials.

8. Presentation title: Empirically Investigating the Clinical Utility of an Optimal Operational Definition of “Suicidal Drivers”

Author: Asher Siegelman, Mariam Gregorian, and David A. Jobes, Ph.D.

Abstract

Historically, the approach to assessing suicidality in patients was to identify suicide “risk factors,” which are defined as a range of largely psychosocial variables that are correlationally related to suicide attempts and completions (O’Conner & Nock, 2014). More recently, some researchers have turned a focus toward potential indicators of more imminent suicide risk by seeking to identify suicide “warning signs” (Rudd et al., 2006). Suicide warning signs are constructs that relate to near-term (minutes, hours, days) acute risk (Rudd et al., 2006). While both risk factors and warning signs are considered important for the research of suicidality, only a single warning sign (anger/aggression) has been found to relate to imminent risk of suicide resulting in limited clinical utility. To further enhance the clinical the effectiveness s of suicide assessment Jobes et al (2016) have proposed the idea of “suicidal drivers” which compel the patient to consider suicide. Patient-defined suicide drivers are central

treatment planning within the Collaborative Assessment and Management of Suicidality (CAMS; Jobes, 2016). Tucker et al (2015) have noted that suicidal drivers are patient-specific suicidal warning signs and the construct may represent a whole new light on our efforts to better identify and ultimately treat suicidal risk. However, the practical process of incorporating drivers within practice and treatment research has been somewhat challenging. Previous work has revealed that drivers identified within CAMS research were often equivalent to risk factors and warning signs and perhaps not specific enough (Siegelman & Jobes, 2015). It was posited that drivers were being conceptually equated to risk factors or warning signs due to the lack of an optimal operational definition (Siegelman, Gregorian, & Jobes, 2016). Consequently, based on CAMS research data, drivers were operationally defined as 1) the patient specified context that creates greatest risk of suicidal behavior and 2) the meaning the patient ascribes to understanding and fully appreciating that context (Siegelman et al., AAS, 2016).

Research Aims

Aim 1: To further explore the clinical utility of patient-defined drivers that meet the criteria for the operational definition to see if they more meaningfully predict treatment outcomes that more inexact drivers.

Aim 2: Investigate the treatment planning utility of drivers that meet criteria for the operational definition to see if they lead to more complete treatment plans than drivers that only partially meet criteria or do not meet criteria.

Methods

We will use an archival data set (n = 73) of suicidal Soldiers from the Operation Worth Living (OWL) study in a South-Eastern US military installation as well as an archival data set (n = 31) from a college student clinical trial sample. These data sets will be used to categorize drivers per the operational definition criteria as 1) complete = meet full criteria, 2) partial = meet one criterion, and 3) incomplete = do not meet either criterion. Similarly, treatment plans from the data will be macro-coded to determine quality (complete, partial, incomplete). A Chi-Square Test of Independence will be used to analyze the relationship between driver categories and treatment outcome (duration of treatment). Additionally, a Chi-Square Test of Independence will be used to analyze the relationship between driver categories and quality of treatment plan (complete, partial, incomplete).

Results

Qualitative data from the OWL data set were previously analyzed (Siegelman, Gregorian, & Jobes, 2015) to develop an operational definition for drivers.

Conclusions

This paper will serve to determine the clinical utility of drivers that meet criteria for their operational definition to aid researchers and clinicians in their effort to identify and treat imminent risk.

SUPPORTING DATA: All figures and/or tables shall include legends and be clearly marked with figure/table numbers.

The key supporting data, figures, and tables from the OWL project are in the main outcomes manuscript which appears in Appendix A of this report.